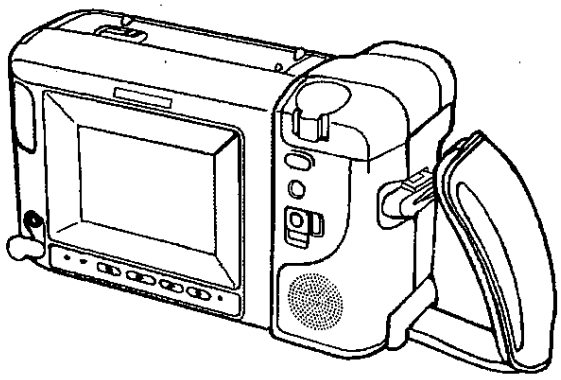
SHARP SERVICE MANUAL

S67B1VL-E66S/



LIQUID CRYSTAL CAMCORDER 8 PAL

MODELS VL-E66S VL-E66H VL-E78E

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified be used.

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SHARP CORPORATION

1. SPECIFICATIONS

Signal System:	PAL standard
Recording System:	2 rotary heads, helical scanning system
Cassette:	8 mm video tape, MP type
Recording/Playback Time:	120 minutes (P5-120)
Tape Speed:	20.051 mm/second
Pickup Device:	1/4" (6.4mm, effective size: 4.5 mm) CCD image sensor with approx. 320,000 pixels including optical black
Lens:	12 × power zoom lens (F1.8, f=4.2-50.4 mm) and full-range auto focus
Lens Filter Diameter:	37 mm
Monitor:	3" (7.5 cm)—full-colour LCD screen (TFT active matrix)
Microphone:	Electret monaural microphone
Colour Temperature Compensation:	Auto white balance
Minimum Illumination:	1.5 lux* (with gain-up)
Video Output Level:	1.0 Vp-p 75-ohm unbalanced
Audio Output Level:	–8 dBs, impedance less than 2.2 kohms
Speaker Output:	200 mW
Power Requirement:	DC 3.6V
Power Consumption:	4.7W (during indoor camera recording in Full Auto mode with zoom motor off)
Operating Temperature:	0°C to + 40°C
Operating Humidity:	30% to 80%
Storage Temperature:	–20°C to +60°C
Dimensions (approx.):	177 mm (W) × 105 mm (H) × 84 mm (D)
Weight (approx.):	700 g (without battery pack, video cassette, and lens cap)

AC Adapter/Battery Charger

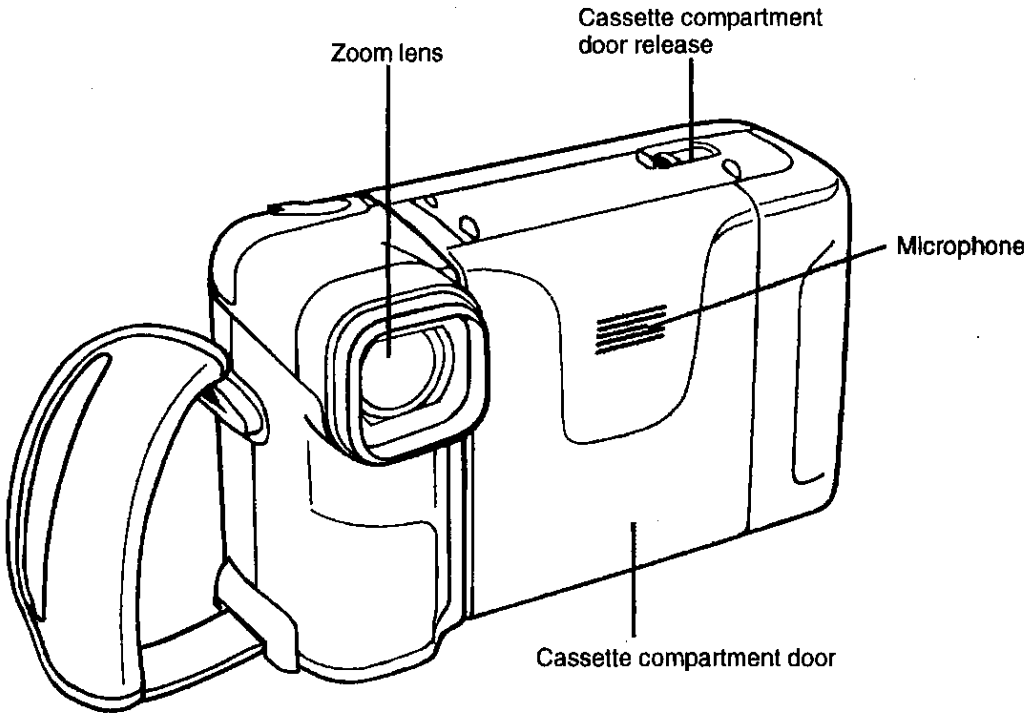
Power Requirement:	AC 110-240 V, 50/60 Hz
DC Output:	4.5 V
Power Consumption:	27 W
Dimensions (approx.):	75 mm (W) × 51 mm (H) × 135 mm (D)
VL-E66S: Weight (approx.):	(UADP0206TAZZ): 360 g
VL-E66H: Weight (approx.):	(UADP0207TAZZ): 425 g
VL-E78E: Weight (approx.):	For Asia/Middle East (UADP-0232TAZZ): 360 g For Hong Kong (UADP-0223TAZZ): 425 g For Australia/New Zealand (UADP-0208TAZZ): 385 g

Specifications are subject to change without notice.

*Minimum illumination: Since there is no widely accepted testing procedure for determining minimum illumination capability, lux ratings are comparable only between models from the same manufacturer.

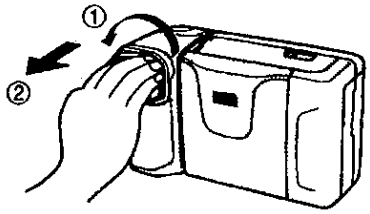
2. PART NAMES

Front View

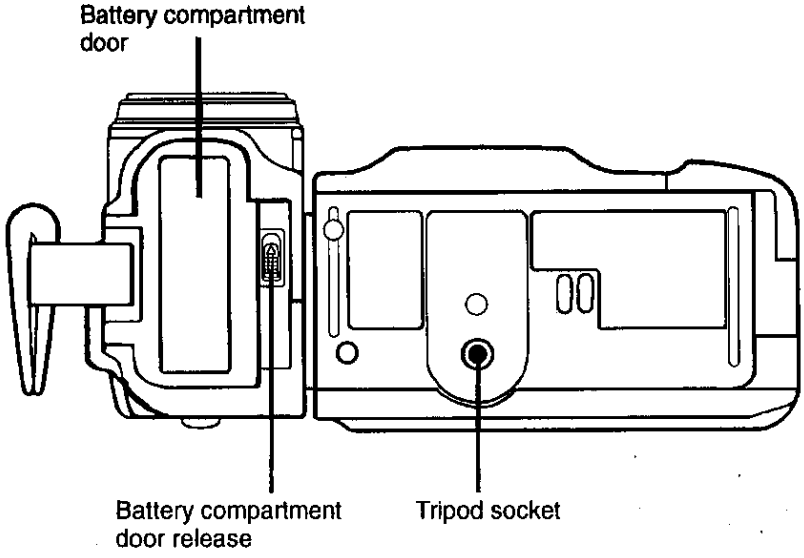


Removing the Lens Hood

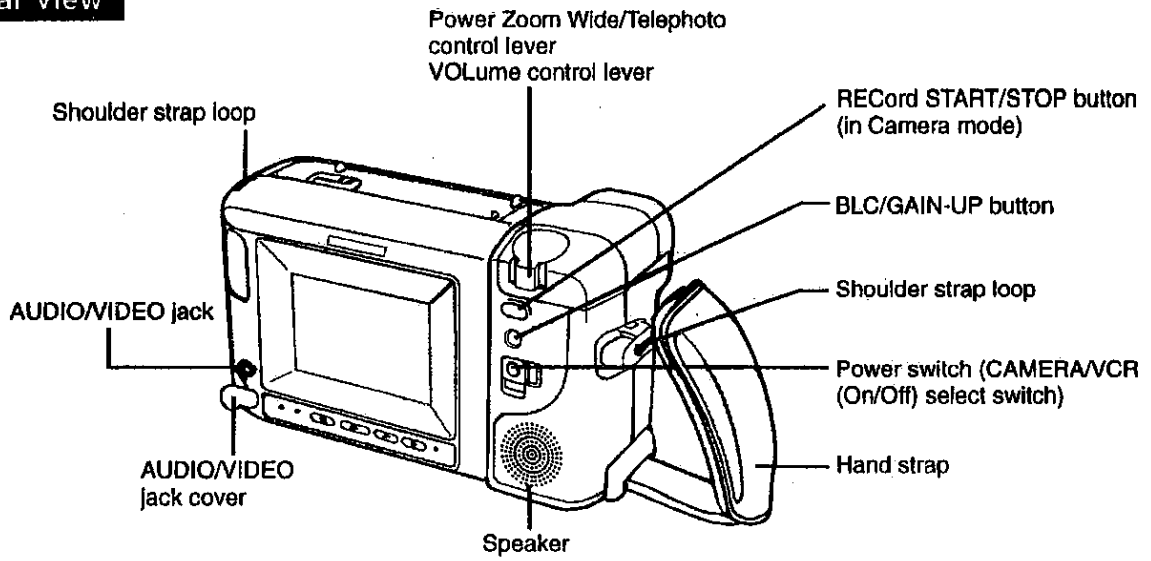
Before mounting the optional wide or telephoto conversion lens, remove the lens hood by turning it counter-clockwise.

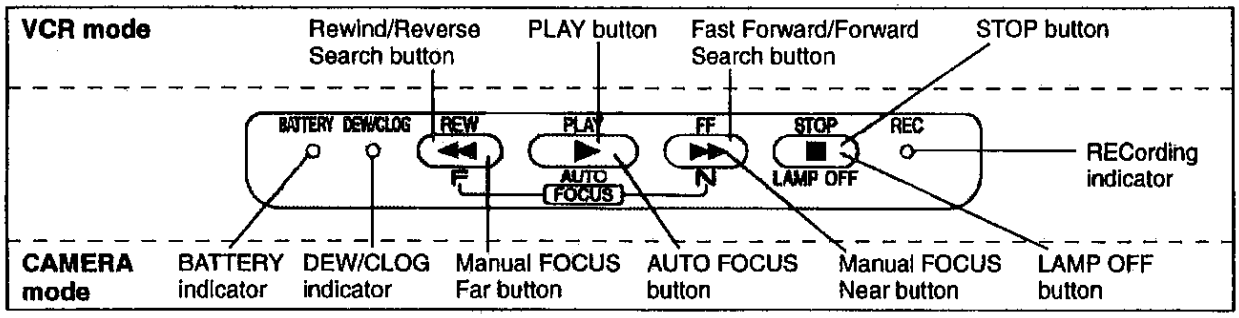


Bottom View



Rear View





Warning Indicators

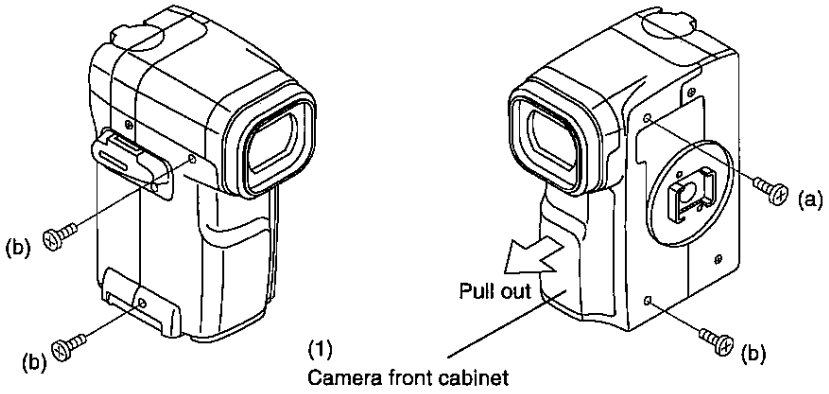
Indicator status		Description of warning
BATTERY DEW/CLOG ☀ ○ Red	BATTERY indicator is flashing.	The battery is almost depleted. Normally the BATTERY indicator starts to flash and power turns off about 3 to 5 minutes later (though certain battery pack conditions may cause other indications). Prepare a full charged battery pack for replacement.
BATTERY DEW/CLOG ○ ● Red	DEW/CLOG indicator is lit.	• Dew has formed inside the VIEWCAM. Wait for a few hours to allow dew to dry. • The VIEWCAM automatically turns off within 10 seconds after this warning operation starts. • Do not disconnect the power source from the VIEWCAM while this indicator is lit.
BATTERY DEW/CLOG ○ ☀ Red	DEW/CLOG indicator is flashing.	The VIEWCAM's heads are dirty and should be cleaned.
REC ☀ Red	REC indicator is flashing.	There is less than about one minute of tape remaining. Prepare to load a new cassette.
BATTERY DEW/CLOG ☀ ☀ Red Red	BATTERY and DEW/CLOG indicators are flashing in sync.	• The video cassette is defective and should be removed. • Tape protection circuit is activated. Eject the tape from the VIEWCAM and reload it.

3. DISASSEMBLY AND REASSEMBLY

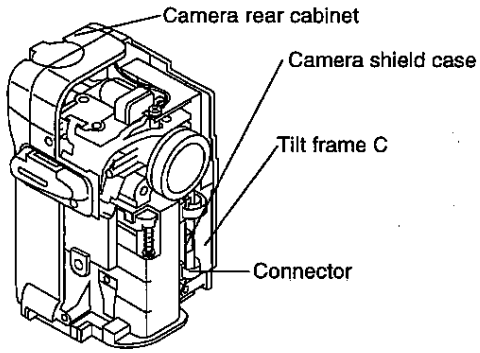
3-1. Removal of the camera section

Note:
Before removing the cabinet, turn off the power supply, and ascertain that the battery has been removed.

1. Remove one screw ((a)XiPSF20P04000) and three screws ((b)LX-HZ0018TAFF), and pull out the camera front cabinet (1).

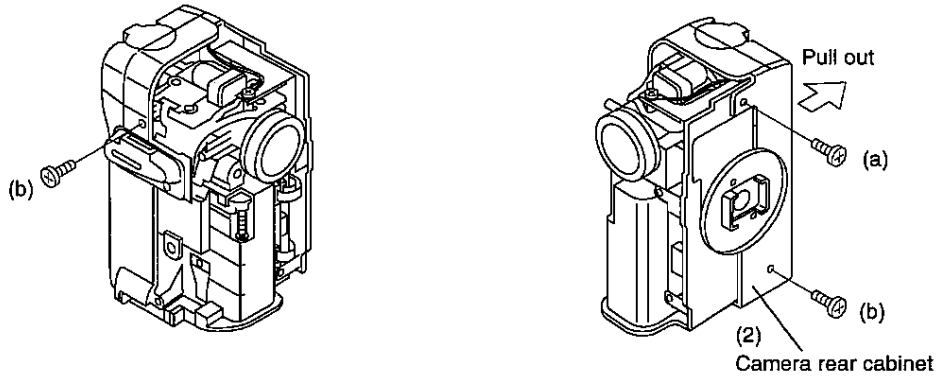


2. Remove the connector (1 pc.).

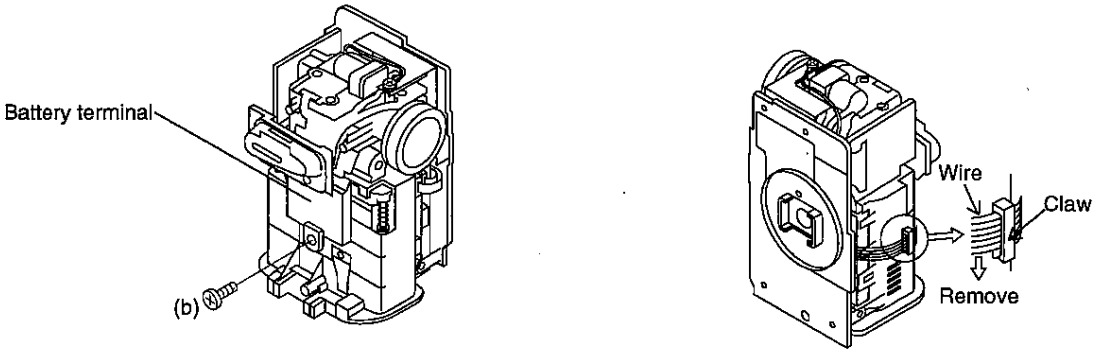


Note:
When assembling the camera rear cabinet, lay the FPC between the camera shield case and the tilt frame C, and insert it into the connector.

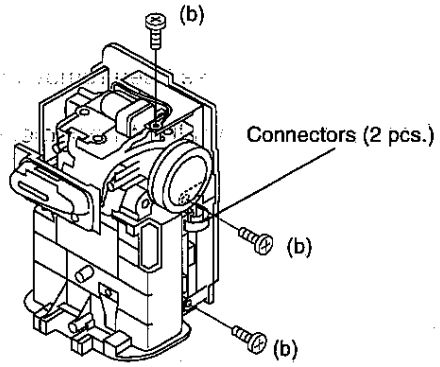
3. Remove one screw ((a)XiPSF20P04000) and two screws ((b)LX-HZ0018TAFF), and pull out the camera rear cabinet (2) backwards.

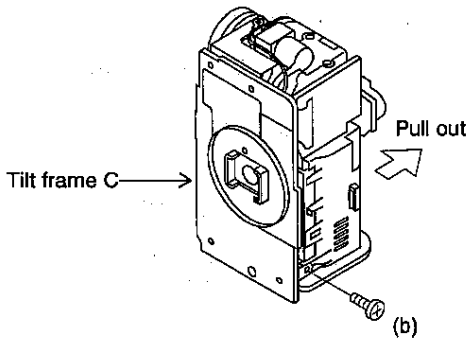


4. Remove one screw ((b)LX-HZ0018TAFF), remove the battery terminal, and remove the wire from the claw.

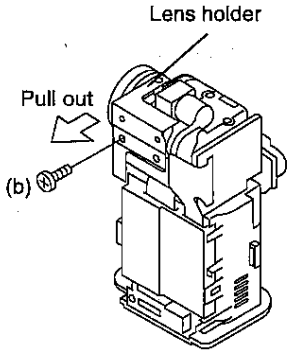


5. Remove two connectors and four screws ((b)LX-HZ0018TAFF), and pull-out the lens unit from the tilt frame C.

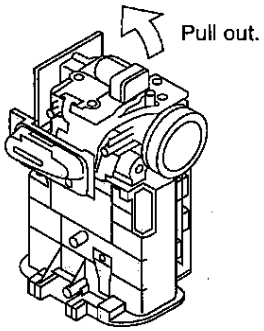




6. Remove one screw ((b)LX-HZ0018TAFF), pull out the lens holder.



7. Disengage the claw of the lens section, using the point of a pen as shown in Figure A, and pull out the lens upwards.



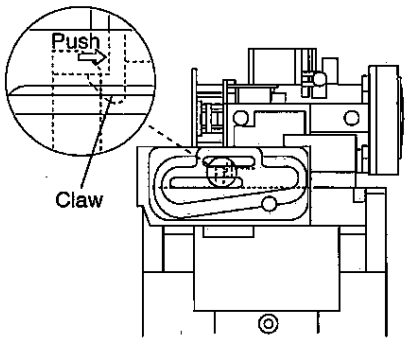
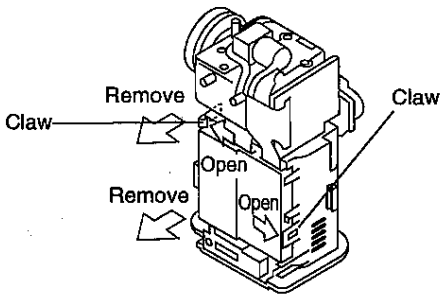


Figure A

Note:
Be careful so as not to damage the FPC since the camera PWB unit is connected to the lens unit with the FPC attached.

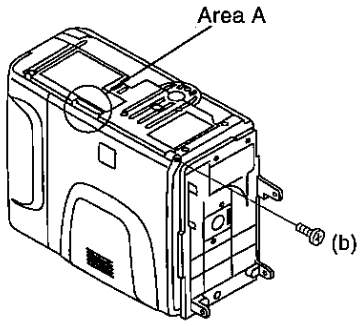
8. Remove the camera PWB unit and the lens unit together, opening two claws of the battery holder outward.



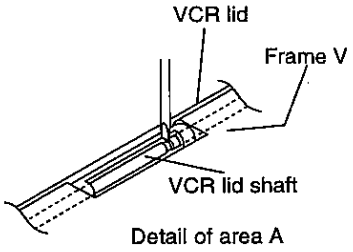
3-2. Disassembly of the VCR main body

1. Removal of the VCR lid shaft

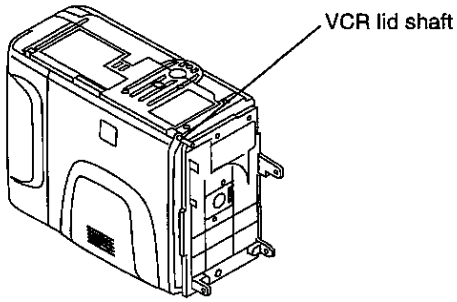
(1)Remove one screw ((b)LX-HZ0018TAFF).



(2)Bring the jig (example: slotted precision screwdriver) into contact with the removal groove of the VCR lid shaft, and slide the screwdriver with care to prevent injuring the VCR lid and frame V.

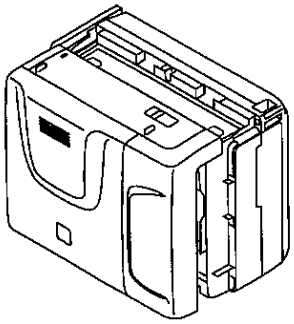


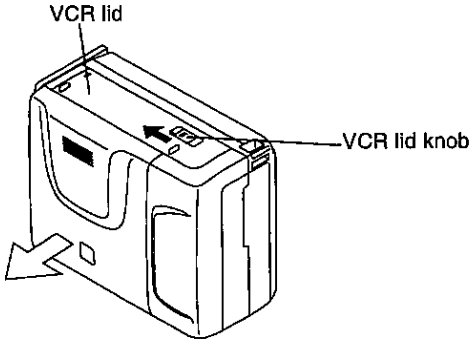
(3)Pull out the VCR lid shaft head which projects beyond the surface of the VCR lid.



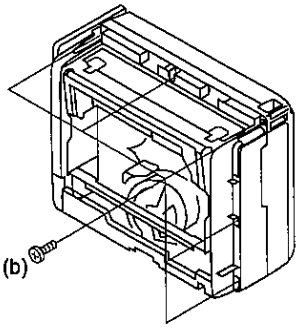
2. Disassembly of the cabinet L

(1)Slide the "VCR lid knob" in the arrow direction, and slide the VCR lid in the arrow direction as far as the cabinet L fastening screw is visible. (Left figure) Since the connector of the microphone is still connected, take care to prevent excessively sliding the VCR lid.

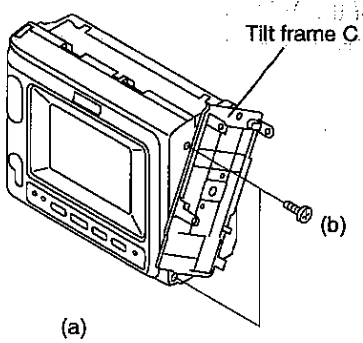




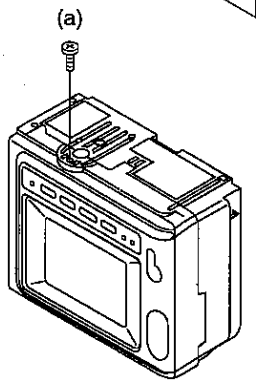
(2)Remove five screws ((b)LX-HZ0018TAFF).



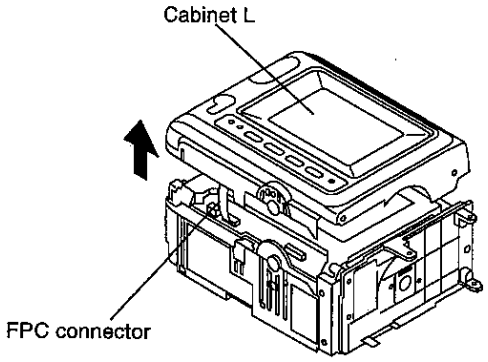
(3)Turn the tilt frame C so that the screwdriver can be easily inserted, and remove two screws ((b) LX-HZ0018TAFF).



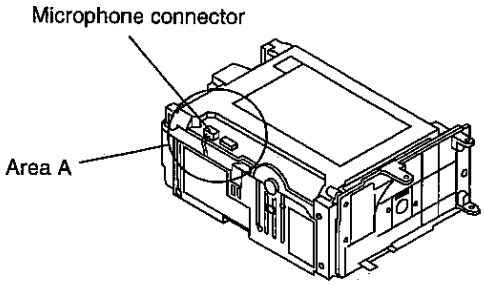
(4)Remove one screw ((a)XiPSF20P04000).



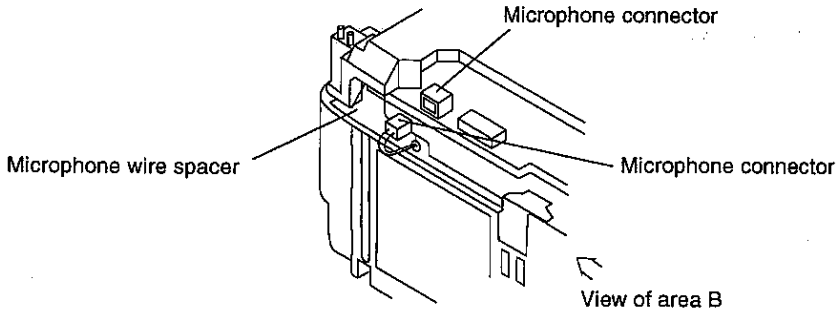
(5)Remove the cabinet L to the midway, and disconnect the FPC connector.



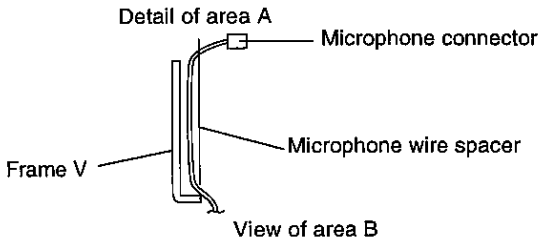
3. Removal of the VCR lid
(1)Disconnect the microphone connector.



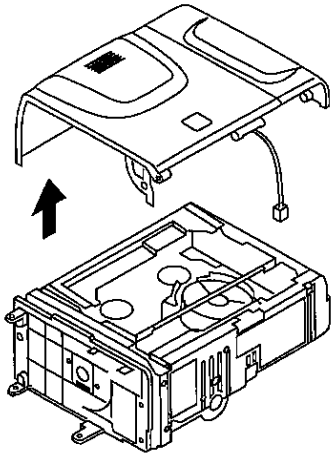
(2)Remove the connector cable from the hole of the microphone wire spacer.



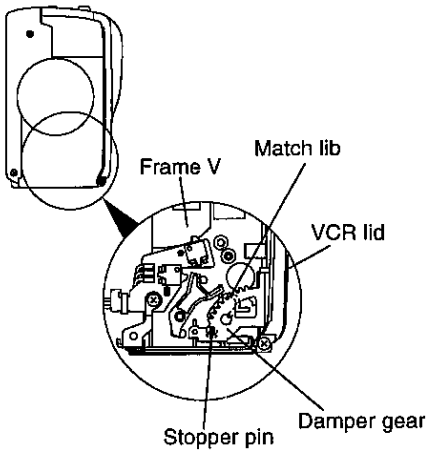
(3)Remove the microphone wire spacer from the Frame V.

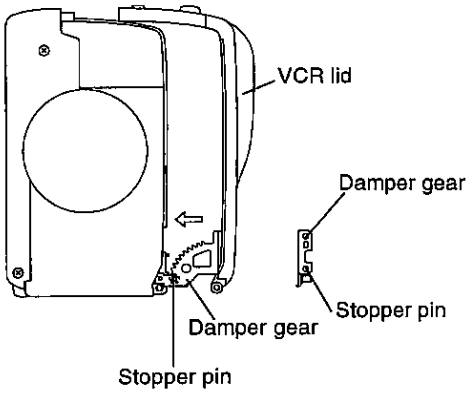


(4)Pull out the microphone wire cable with care to prevent it from interfering with the mechanical parts, and remove the VCR lid.

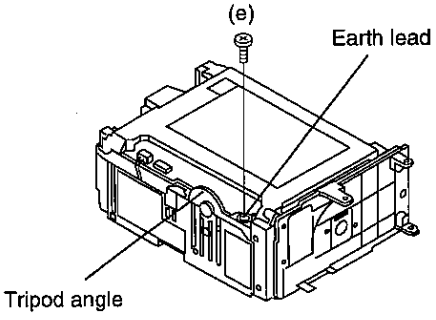


Caution for installation of the VCR lid
When installing the VCR lid, move the VCR lid in the arrow direction, keeping the VCR lid parallel to the main body as shown below. If it is tried to install it when the VCR lid is not parallel to the main body (when the lid is open), the VCR lid can not be inserted into the specified position since the stopper pin which is staked on the damper gear interferes with the match lib (engagement lib with the stopper pin) which is produced on the frame V.

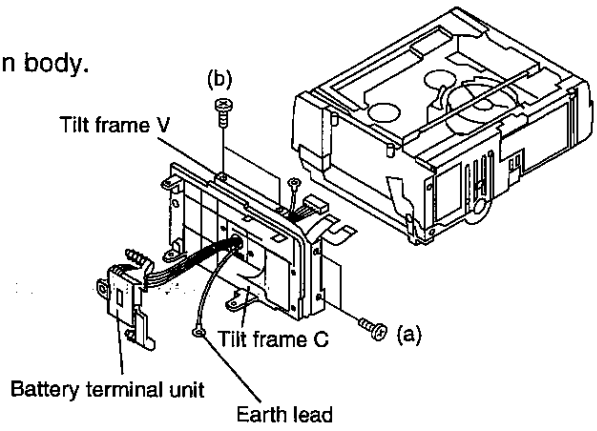




4. Removal of the tilt unit
(1)Remove one screw ((e)LX-HZ0048TAFE) fixing the lug of earth lead to the tripod angle (screw ass'y for fixing of tripod).

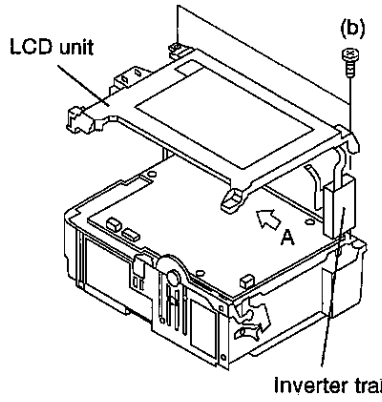


(2)Remove two screws ((b)LX-HZ0018TAFF).
Remove two screws ((a)XiPSF20P04000).
Disconnect three connectors.
Remove the tilt unit from the cabinet of the main body.

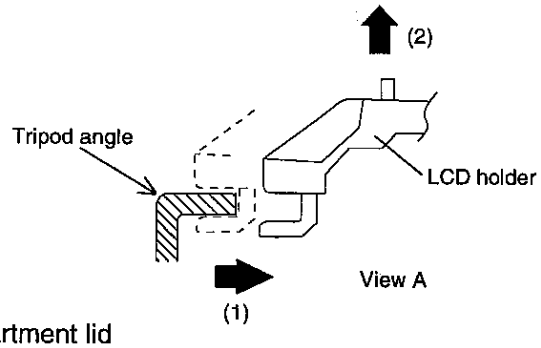


5. Disassembly of the LCD holder

(1)Remove two screws ((b)LX-HZ0018TAFF) and two connectors, and remove the LCD unit (with inverter) from the main body.

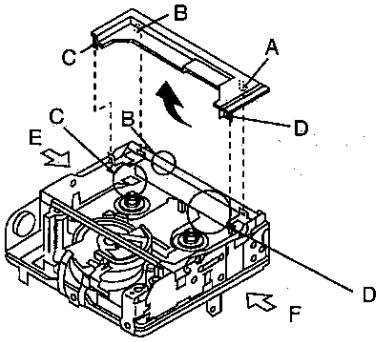


Note:
Slide the lower right fixing part of LCD holder in the direction of (1), and then move the LCD holder in the direction of (2).



6. Removal of the cassette compartment lid

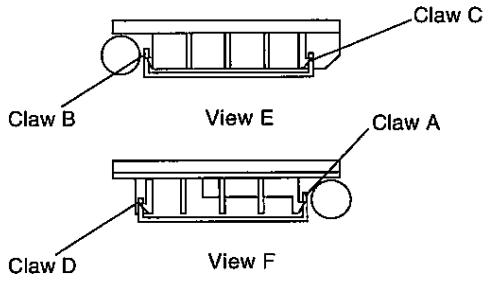
(1)Using the slotted precision screwdriver, push and turn the two claws (C and D) which fasten the cassette compartment lid, and the cassette compartment lid will be removed from the hook area of the cassette component.



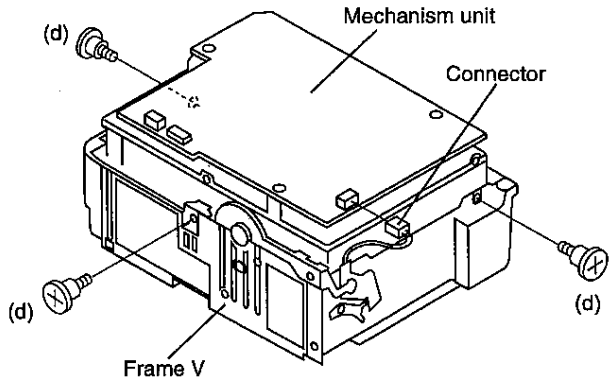
(2)Turning the cassette compartment lid in the arrow direction, lift it, and the claws A and B will be disengaged to remove the cassette compartment lid.

Note:
Take care to prevent breaking the claws of the cassette compartment lid.

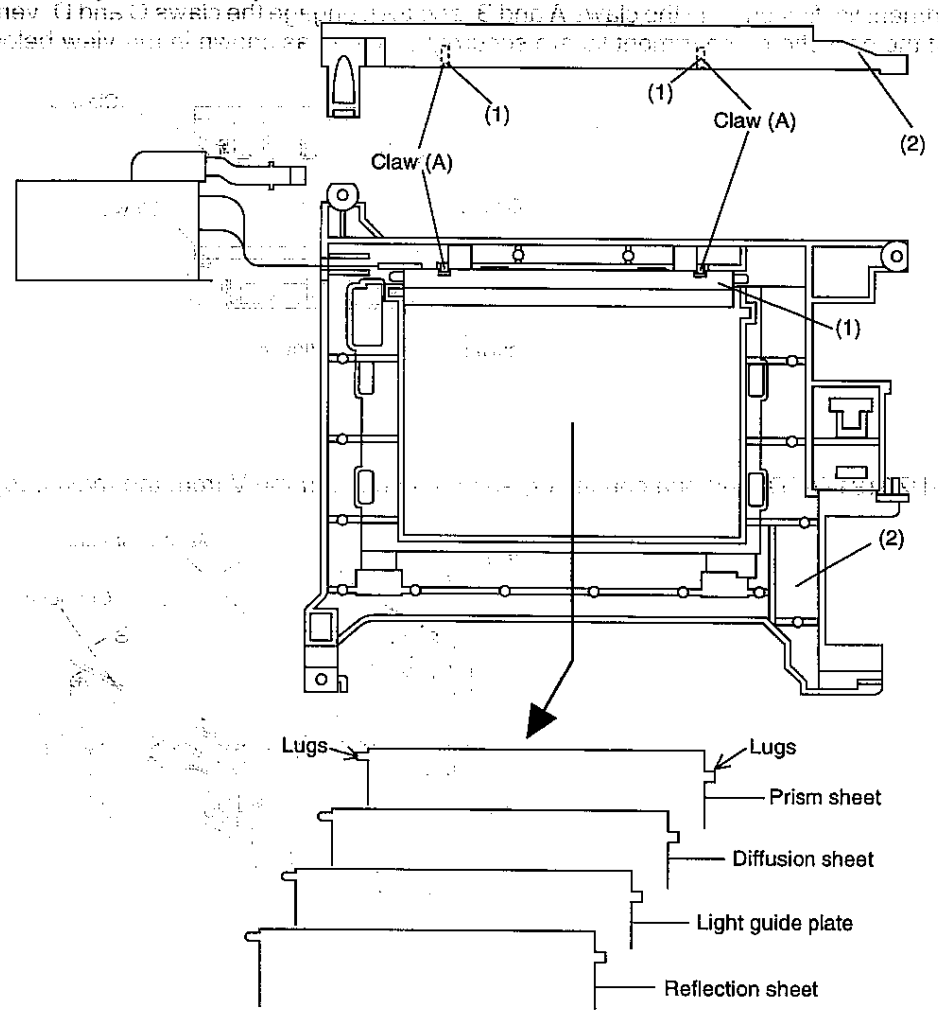
Note:
When fixing the cassette compartment lid, first engage the claws A and B, and then engage the claws C and D, verify that the four claws (A, B, C and D) of the cassette compartment lid are securely engaged as shown in the view below.



7. Disassembly of the frame V
(1) Remove three screws ((d)LX-BZ0191TAFD) and one connector, and remove the frame V from the main body.

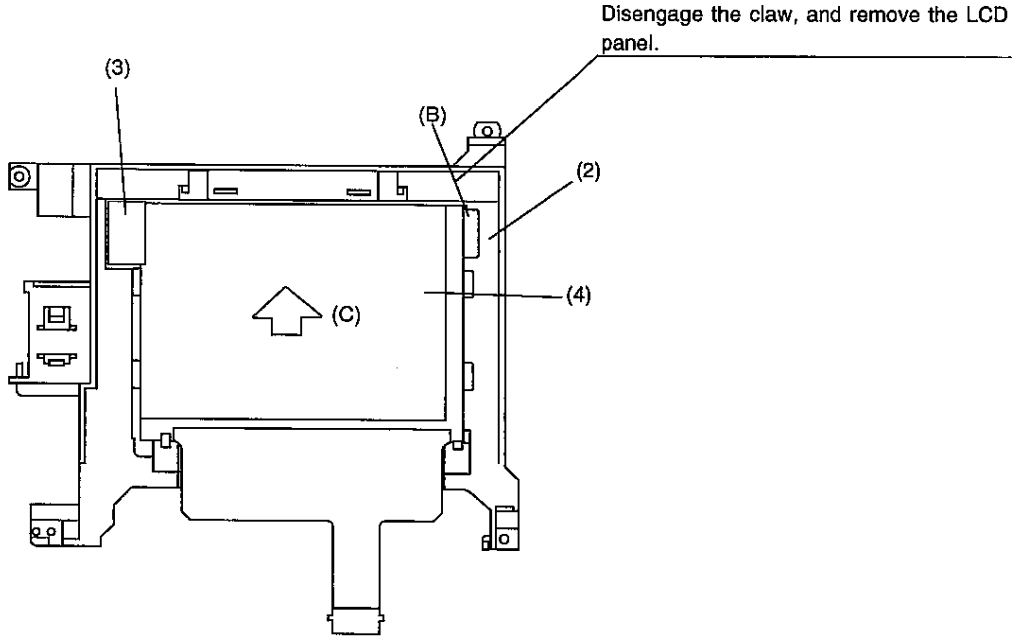


8. Disassembly of the LCD panel



1. Disengage two claws, and remove the lamp unit (1) from the LCD holder (2).
2. Remove the sheets from the LCD holder (2).
3. Pull the LCD holding sheet (3).
4. Disengage the claw (B) , and slide the LCD panel (4) in the (C) direction to remove the LCD holder (2).

Note:
When handling the prism sheet, diffusion sheet, light guide plate, and reflection sheet, do not touch any parts other than lugs and sides.
Put the light guide plate and reflection sheet between reflectors of lamp. Therefore, install them together with the lamp ass'y.

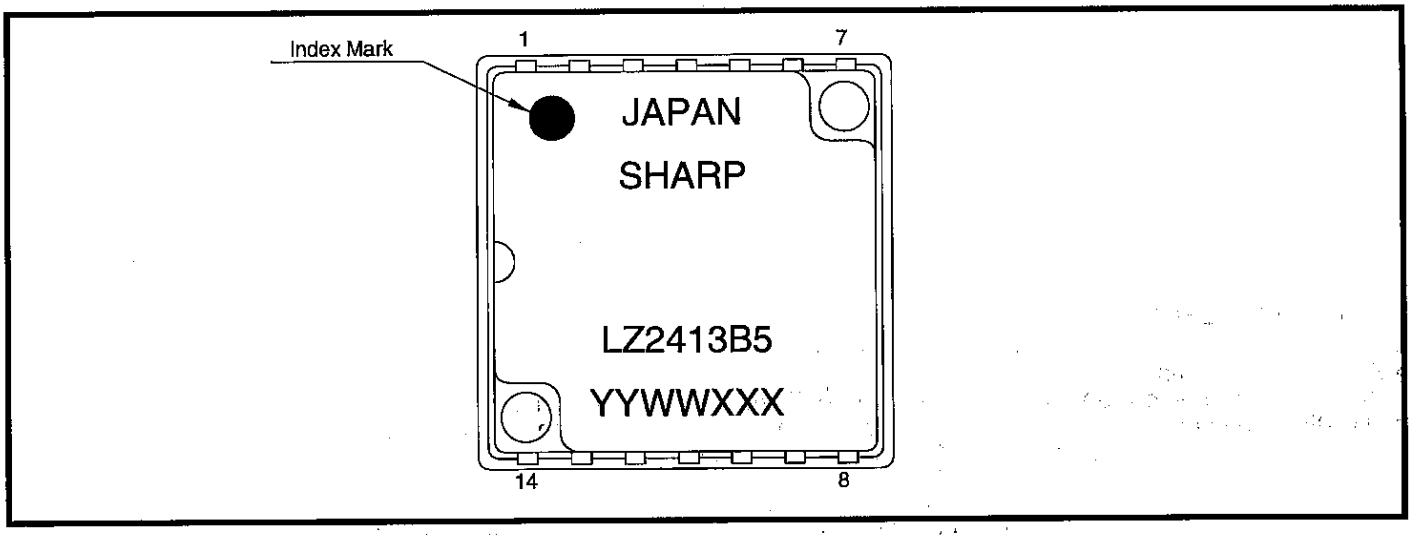


3-3. REPLACEMENT OF CCD SENSOR

3-3-1. BEFORE REPLACEMENT

1) The CCD image sensor is more sensitive to electrostatic breakage than C-MOS LSI. Therefore sufficient means to prevent electrostatic damage must be taken when it is replaced.
- Ground the soldering iron.
- Ground also the human body, using the wrist strap(through an 1 Mohm resistor).
- Until the CCDsensor is mounted on the PWB, fit it to the conductive sponge, and short-circuit the foot lead.

2) Take utmost care so that the surface glass of CCD sensor and optical filter are not contaminated and damaged. If any contamination is found, for example fingerprint, wipe it off with silicon paper or clean chamois skin.
3) When replacing the CCD sensor, use the antistaic grounded soldring iron, and perform quickly soldering.



V-OFD voltage marked on the back of CCD

3-3-2. REMOVAL OF CCD

1) Unsolder the CCD sensor leads from the sensor PWB.
2) Take out the sensor PWB.
3) Remove the two screws (2), and remove the sensor holder and CCD sensor.

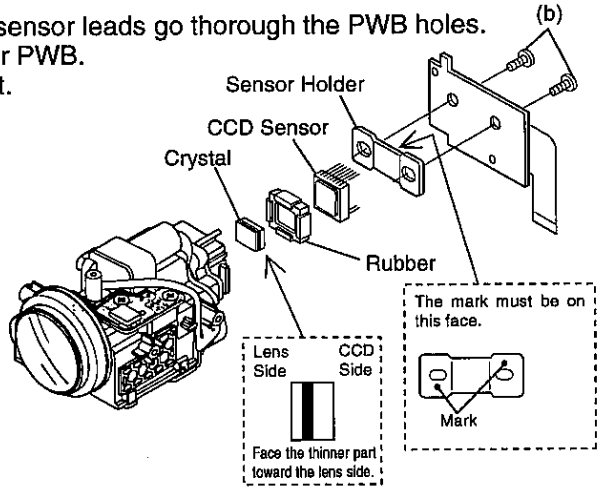
3-3-3. MOUNTING OF CCD

1) Place the lens unit upright (since the CCD sensor mount ID faces upward, care must be taken so as not to damage the front lens of unit), put the crystal filter first and then the dust protection rubber into the CCD holder of lens unit. Set the crystal unit with its thin side toward the lens unit.
2) Place the CCD sensor so that the its No. 1 pin is at the right lower (Positioning hole to be at right), and put the CCD sensor into the CCD holder. For smooth and tight fitting, press the right lower part of back of CCD sensor, and then press the left upper part.

Note: Pay attention to the direction of CCD sensor.

3) Place the sensor holder so that its two round markings be visible, and fix the sensor holder with the two screws ((b)LX-HZ0013TAFF).
4) Mount the sensor PWB so that the CCD sensor leads go thorough the PWB holes.
5) Solder the CCD sensor lead to the sensor PWB.

Note: Take care not to apply excessive heat.



3-4. INITIAL SETTING OF EEPROM IC

3-4-1. EEPROM data alterable ways

1) After 26 pin harnesses of RUNTK0309TA were connected to regulation connector P8 by a camera, OSD output makes a reflection a reflection can indicate it a reflection input, MONITOR OUT terminal (J2) connects to a monitor and to a monitor to outside reflection input terminal (J5) of RUNTK0309TA.

2) After the substance sw was turned into a position of CAM, using the remote control (RRMCG0033TASA) for adjustment, turn on the VCR adjustment mode.

3) VCR adjustment address setting.
   V ADJ
   00 "00" is blinking
   After an objective address was established, play key is pushed and set.
   In addition, numerical change uses a "REW" or "FF" key.

4) VCR adjustment data setting.
   V ADJ
   00 ## Value of "##" differs by an address.
   After an objective data was established, "PLAY" key is pushed and set.

5) When data of other address are changed successively, push "STOP" key, and please repeat operation to 5) from 3).

6) When SW of the substance is turned into off, data are written to EEPROM from systematic microcomputer.

3-4-2. IC702 (EEPROM)

When the IC702 has been replaced, make the following settings and adjustments.
• System code setting
* Set the test mode to the VCR adjustment mode. Take the following steps.

1) Destination code — Write the destination data (model numbers) to the addresses 02 (Main) and 0A (Sub).

Destination	02 (Main)	0A (Sub)
S/H	0A	F5
E	0B	F4

For calling the addresses and writing the data, refer to the VCR adjustment mode.

2) Specification switching code

Address	Data
03 (Main)	80
0B (Sub)	7F

3) Menu selection code

Address	Data
04 (Main)	00
0C (Sub)	FF

4) Software selection code

Address	Data
05 (Main)	00
0D (Sub)	FF

* After setting the above codes, clear the VCR adjustment mode and turn off the power.

Adjustments to follow
Make the system controller servo, VCR, and LCD adjustments according to their respective instructions.

3-4-3. CAMERA ADJUSTMENT

When the IC502 has been replaced, make the camera adjustment according to its instructions.
All the camera adjustment data are written in the EEPROM provided on the lens unit. Therefore, when the lens is replaced, the camera must be adjusted again according to the camera adjusting procedure.

3-5. ADJUSTING THE Y/C, AUDIO AND LCD CIRCUITS ON MODELS WITHOUT A/V IN MODE (A/V IN MODE SET-UP PRODUCE)

1) After connecting the harness of pin 26 of RUNTK0309TA to the adjusting connector P8 at the camera side, input image into the external image input terminal of RUNTK0309TA, and connect the monitor out terminal J2 to the monitor to display the OSD output.

2) Set the switch of main body to CAM, and use the remote control (RRMCG0033TASA) for adjustment to turn on the adjustment mode.

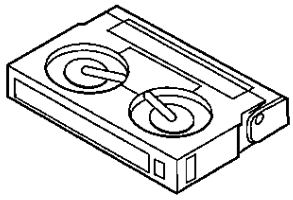
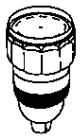
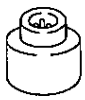
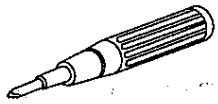
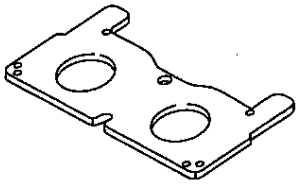
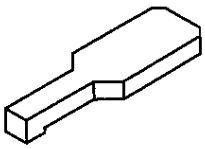
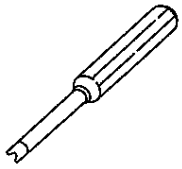
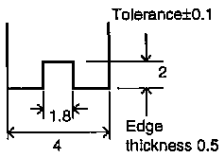
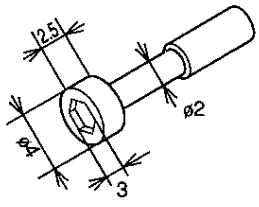
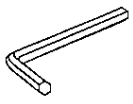
3) Set up the adjustment address (example : EEmode adjustment address 14). Once this address has been set up, the A/V IN mode (test mode) is automatically brought and the images appear on the LCD display.

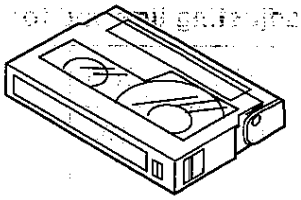
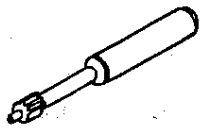
4) Now make the adjustments referring to the instruotions in the manual.

4. MECHANISM ADJUSTMENT

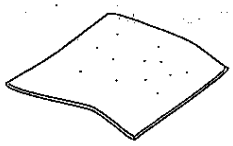
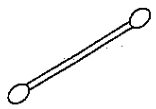
4-1. Mechanism checking/adjusting jigs, tools and parts

4-1-1. Mechanism checking/adjusting jigs and tools

No.	Name	Part No.	Code	Configuration	Model, Uses	Remarks
1	Cassette torque meter for PB	JiG8T-012	CV		• (10 g.cm/25 g.cm)	
2	Cassette torque - meter for VS-REW	JiG8T-032	CV		• (50 g.cm/25 g.cm)	
3	Torque gauge	JiGTG0045	CN		• For measurement of loading braketorque	
4	Torque gauge head	JiGTH-MX7U	BS		• For torque gauge listed above	
5	Torque driver (1.5 kg.cm)	JiGTD1500RT0H	CB			
6	Master plane	JiGMP-MX7U	CG		• For adjustment of Tu guide height • For adjustment of Si roller height • For checking of reel disk height	
7	Height adjusting jig	9DAGH-E31S	BM		• For adjustment of Tu guide height • For adjustment of Si roller height	
8	Guide roller height adjusting driver	JiGDRiVERHMX7U	BU		Bit shape (See the figure below) 	
	Tu guide height adjusting driver	9EQDRiVER-V712	BL			
9	Hex wrench	0.9mm			• For loosening or tightening of Motor stator	
		1.3mm			• For loosening or tightening of Rotary transformer rotor	

No.	Name	Part No.	Code	Configuration	Model, Uses	Remarks
10	Travel adjusting tape	VR2ABOPS	BT	 TAPE CONTENTS: VIDEO IMAGE: MONOSCOPE; AUDIO: L-CH 400Hz, R-CH 1,000Hz; TIME: 30MIN		
11	Tension Band and Plate Adjusting Jig	JIGDRIVERMX7U2	BN			
12	Others (1) Slide clippers (2) High-precision screwdrivers (Phillips head, slotted head) (3) Radio pliers (with thin jaws) (4) A pair of tweezers					

4-1-2. Parts for periodic inspection and maintenance.

No.	Name	Part No.	Code	Configuration	Model, Uses
1	Oil 1) COSMOHYDRO HV100				• Cosmo Oil Co., Ltd.
2	Cleaning paper	JIGDUSPER	AP		• Dusper Σ (Sigma) (Ozu Co., Ltd.)
3	Superfine swab				
4	Grease Morycoat YM-103/X5-6020				• Dow Coaning
5	Screw locking agent (1401B)				• Three Bond
6	Cleaning liquid (Industrial-use ethyl alcohol)				

4-2. Items and timings of inspection and maintenance

The mechanism of VCR needs the following periodic inspection and maintenance in order that it maintains its high quality. Also, after the machine is repaired, execute the following maintenance and checks regardless of how long it has been used.

4-2-1. Inspection and maintenance list

	Checking/Maintenance point	Usage time (hrs.)					Possible symptom encountered	Remarks
		500	1,000	1,500	2,000	3,000		
Tape travel system	Tape travelling route (Refer to Section)	□	□	□	□	□	• Lateral noise • Unclean head • Screen shaking	Rollers • If abnormal rotation or deflection (significant) is found, replace the roller. Other than rollers • Clean the tape contacting areas. Be sure to use the specified cleaning agent.
	Drum (Refer to Section)	□	□	□	□	□		
	Video head	□	□○	□	□○	□○	• Improper S/N ratio • No color appears.	
	Earth brush	—	★	★	★	★	• If significant brush nobbing noise is heard, replace.	
Driving system	Timing belt	—	★	—	★	★	• Tape does not run. • Tape slackens. • Screen shakes.	• Replace if failure is found.
	Pinch roller	□	□	□	□○	□		
	Capstan D.D. motor	—	○	—	○	○		
	Relay Pulle shaft Pulle gear shaft	—	Δ	—	Δ	Δ	• Abnormal sound	• Apply oil. (Oil: COSMOHYDRO HV100) Note: After oil is applied to the drive gear shaft, slightly wipe it off with swab.
	Drive gear shaft	—	Δ	—	Δ	Δ		
	Loading motor	—	★○	—	★○	★○	• Not ejectable • The specific mode cannot be set.	• Replace if failure (abnormal sound) is detected.
Performance check	Abnormal sound	★	★	★	★	★		• If conformance to the standard is not ensured, replace part.
	PB/VS-REW take-up torque	—	★	—	★	★		
	PB/VS-REW back tension torque	—	★	—	★	★		
	Tu brake	—	★	—	★	★		
	HC (Head Cleaner)	—	○	—	○	○		

Oil: COSMOHYDRO, HV100
Grease: MORYCOAT YM-103/X5-6020
Screw locking agent: THERE BOND 1401B
Cleaning liquid: Industrial-use ethyl alcohol

○ : Replace.
□ : Clean.

Δ : Apply oil.
★ : Check,

4-2-2. Notes and cautions

(1) Any cut washers, once removed for parts replacement or for other reason, must be replaced with new ones.

(2) The mechanism of this VCR does not involve any volume adjustment. If the specified range is not satisfied, either cleaning or replacing the parts is required.

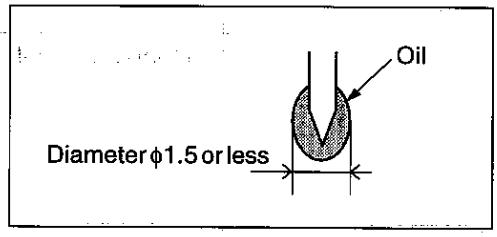
(3) Oils
a) Be sure to use the specified oils (different viscosity may cause troubles).
b) For the bearings, be sure to use oil that is free form dust and other foreign substances. (Dust or foreign substance contained in the oil may cause wear or seizure of the bearings.)
c) A drop of oil represents the amount of oil which is held on the needle top as shown in the figure below.

(4) The circuit repair must be executed without removing the V frame.

(5) For operating the mechanism alone, actuate it with the motor. The terminal-to-terminal voltage must be DC4V or less.

(6) When installing the cassette control, press the part A shown below. Do not press other parts.

(7) Take care so that the whole mechanism is not deformed.



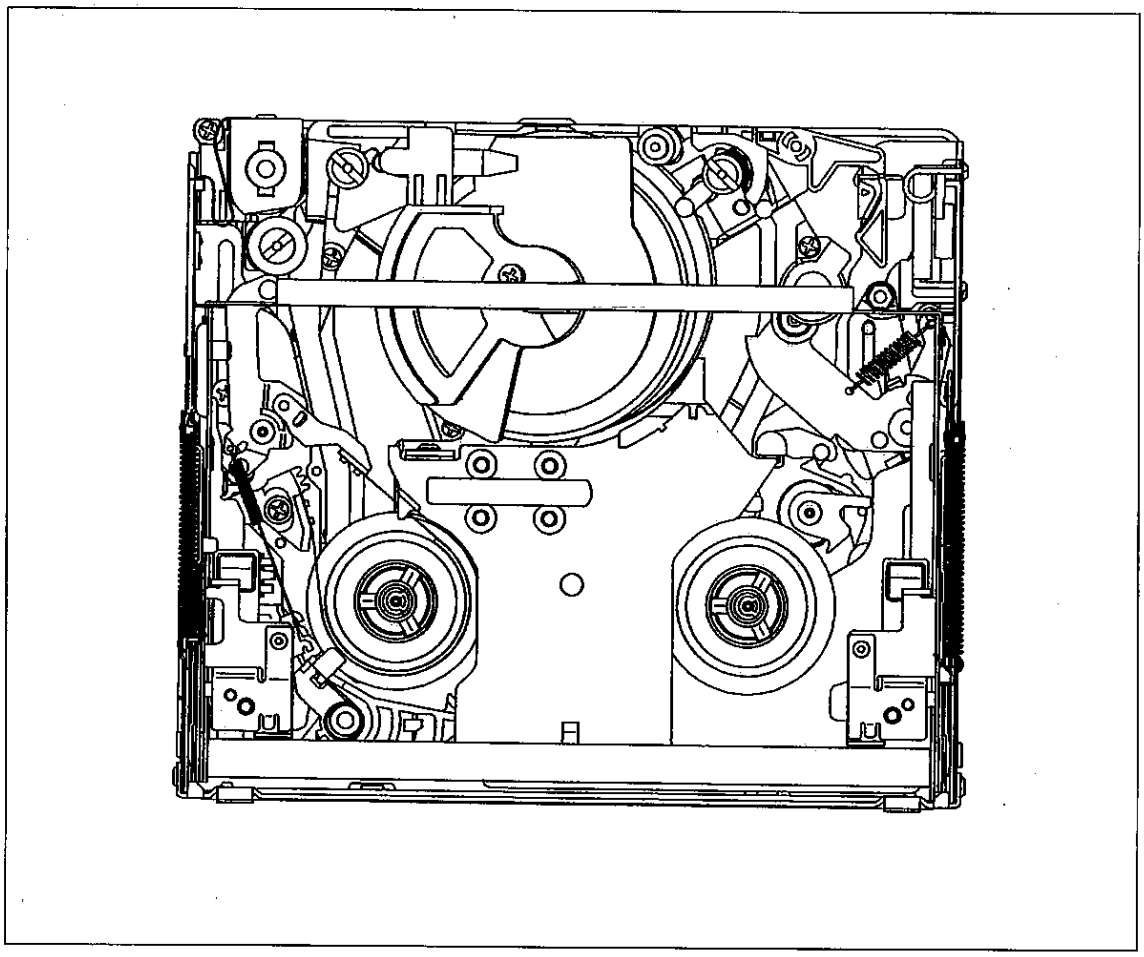


Figure 1

4-3. Mechanism checks and adjustments

The description given below relates to the general field services, but does not relate to the adjustment and replacement that require high level equipments, jigs, and technical skills.
In order to maintain the initial characteristics of the machine, it is necessary to execute the maintenance and check and to prevent damage to tapes and other parts. For adjustments which need jigs, be sure to use the jigs.

Notes and cautions

(1) For mechanism checks and adjustments, be sure to use the AC adapter as the power supply.

(2) For running the tape, be sure to install the cassette control ass'y in advance. (If the cassette control ass'y is to be removed subsequently after its installation.)

4-3-1. Checking the reel disk height

(1) Remove the cassette control ass'y.

(2) Taking due care not to let the master plane touch the tape running areas such as the drum and the guide rollers, position the master plane so that the two guides (A and B in the figure 1) are set in the holes of master plane, then properly set it in the mechanism.

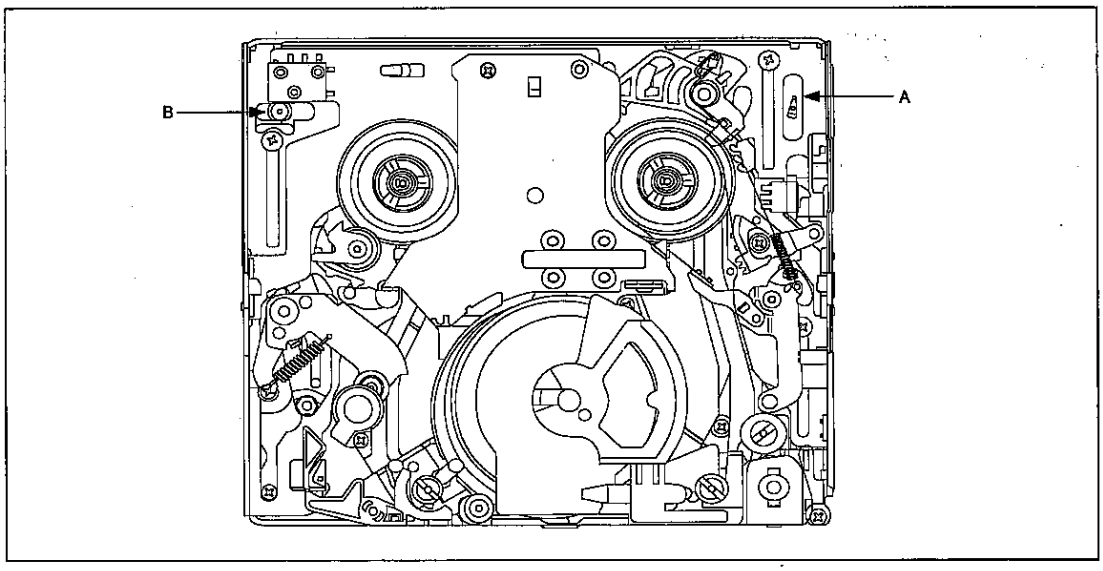


Figure 1

(3) Using the slide callipers or the like, check that the distance from the upper surface of master plane to the reel support surface of the S/Tu reel disk is within the specified range.

Note:
When measuring, do not apply excessive force to the reel support surface of reel disk.

(4) If the measurement is not within the specified range, replace the reel disk ass'y.

(5) Check the items (2) to (4) above in the following two modes.
a) Standby mode
b) Playback (recording) mode

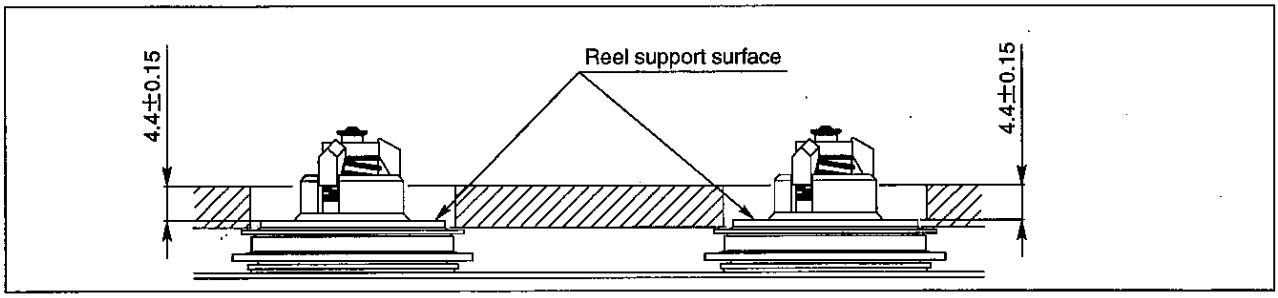


Figure 2

4-3-2. Checking the take-up torque for playback (recording)

(1) Set the torque cassette (8T-012) in position, and check in the SP-mode recording mode (tape recorded in SP mode) that the torque at the tape taking-up side is within the standard range.

Standard of take-up torque for SP-mode recording (playback)

9 ± 3 g.cm with ripples less than 4 g.cm
(If the torque ripples appear, read the center value of torque between the ripples.)

4-3-3. Checking and adjusting the back tension torque for playback (recording)

(1) Checking

1) Set the torque cassette (8T-012) in position, and check in the SP-mode recording mode (tape recorded in SP mode) that the torque at the tape supply side is within the standard range.

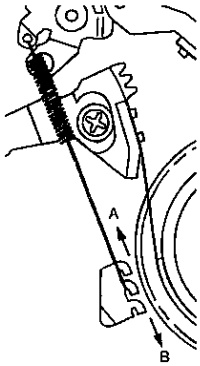
Standard of back tension torque for SP-mode recording (playback):

8 ± 2 g.cm with ripples of less than 2 g·cm
(Torque ripple must be within 8 ± 2g·cm)

(2) Adjustment

1) If the back tension torque is not within the standard range, adjust the tension spring hooking position. If the back tension is too high, hook the spring in the direction A. If the back tension is too low, hook the spring in the direction B.

Note:
1. After back tension torque adjustment be sure to check the tension pole position.



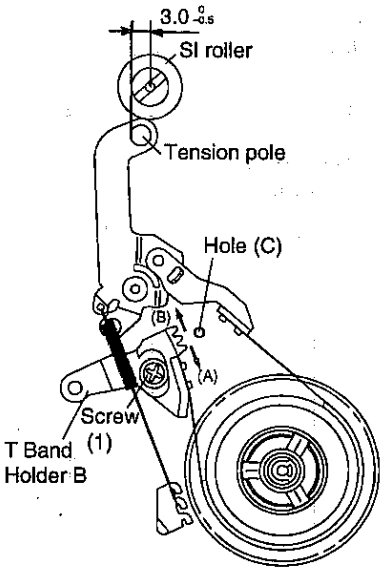
4-3-4. Checking and adjusting the tension pole position

(1) Check
When winding of P6-120 tape is started, check whether the tension pole is in the specified position against Si roller as shown or not.

If it is not in the specified position, remove the cassette and adjust the position in the following procedure.

(2) Adjustment

1. Don't set up any tape, and select the PB mode. (Refer to Item 4-5-1-(4).)
2. Slightly loosen the screw (1) (to such a strength as the T band holder B can be moved).
3. If the tension pole is in the inner position than specified, dislocate the T band holder B in the arrow (A) direction and if it is in the outer position, dislocate it in the arrow (B) position. Then, tighten the screw (1). (For reference, dislocate it 0.4 to 0.8 mm outer from the position specified above.) For the position adjustment, it is convenient to use the position adjustment screwdriver (JiGDRiVERMX7U2). (Set it in the hole (C).)
4. Check the position in the "(1) Check" procedure described above.
5. If it is not in the specified position, repeat the adjusting procedure 1 thru 3.



Note:
- Tightening torque of screw (1) 70 mN•m
- To check the position, be sure to run the tape.
- If the cassette compartment assembly is removed, it makes the work easier. (Refer to Item 4-5-3.)

4-3-5. Checking the take-up torque for rewind playback (VS-REW)

(1) Remove the cassette compartment ass'y and set to the sensor OFF mode.
(2) Set the torque gauge (TG0045) on the S reel disk, and check in the rewind playback (VS-REW) that the torque at the supply side is within the specified range.

Standard of take-up torque in rewind playback (SP mode)

31 ± 5 g.cm with ripples less than 5 g.cm.

(If the torque ripples appear, read the center value of torque between the ripples.)

4-3-6. Checking the back tension torque for rewind playback (VS-REW)

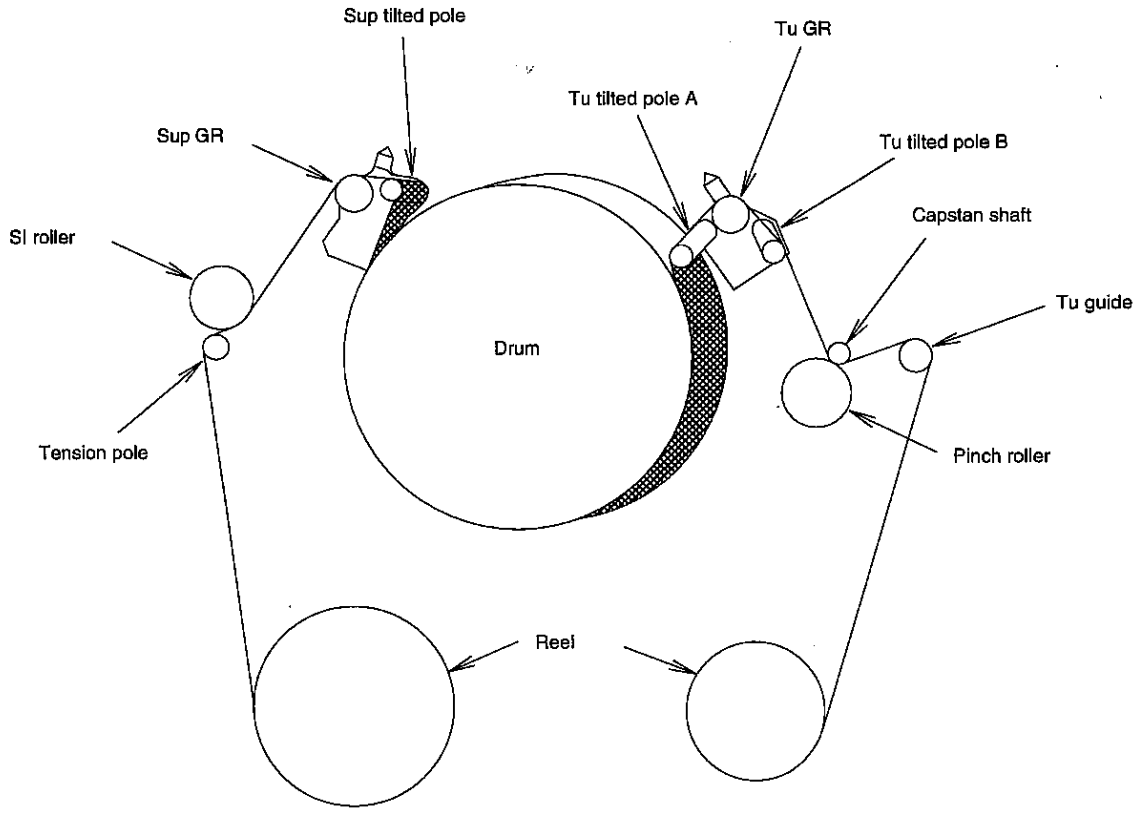
(1) Set the torque cassette (8T-032) in position, and check in the rewind playback (VS-REW) mode that the torque at the tape take-up side is within the specified range.

Standard of back tension torque in rewind playback(SP mode):

14 ± 5 g.cm with ripples less than 5 g.cm

(If the torque ripples appear, read the center value of torque between the ripples.)

4-4. ADJUSTMENT OF MECHANISM TAPE TRAVEL SYSTEM



Tape travel system (Figure 1)

4-4-1. Preparation for adjustment

(1) Clean the tape running areas (guide poles, rollers, drum, Capstan shaft, Pinch roller) (Figure 1)

(2) Connect the oscilloscope to the following TPs.
RF output ... TL3306
H-SW-P TL405
GND TL3307

(3) Play back the alignment tape (JiGWR2-1CP/VR2DBOPS).

(4) Ascertain that each guide is free from remarkable curl.

(5) Ascertain that the RF waveform of inlet and outlet sides is flat on the oscilloscope (Figure 2, (a)). Unless the waveform is flat, (Figure 2, (b), (c)), make an adjustment as follows.

4-4-2. Adjusting the Sup GR and Tu GR

(1) Turn the Sup and Tu guide rollers to get the flat waveform at the inlet and outlet sides.

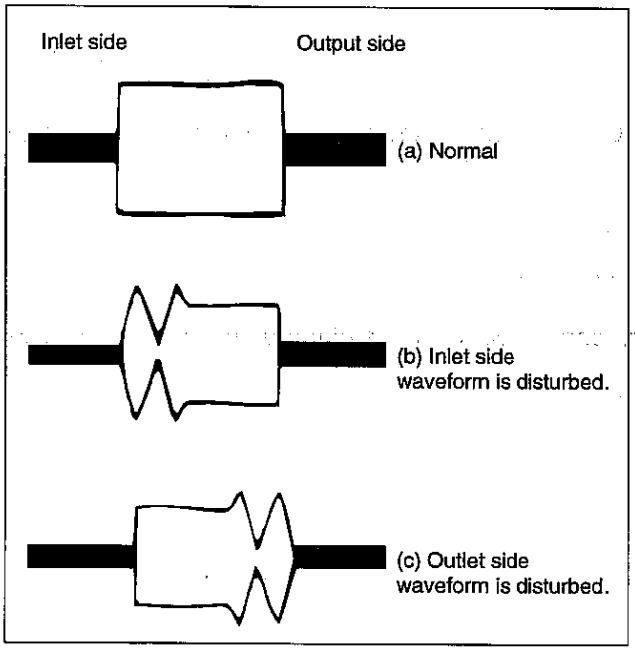


Figure 2

4-4-3. Adjusting the Si roller height

After replacement of Si roller preset and adjust the Si roller height.

(1) Si roller height presetting
Adjust the height from the upper surface ofmechanism chassis to the upper surface of lower flange with the aid of jig. Then lower it by 90° (clockwise).

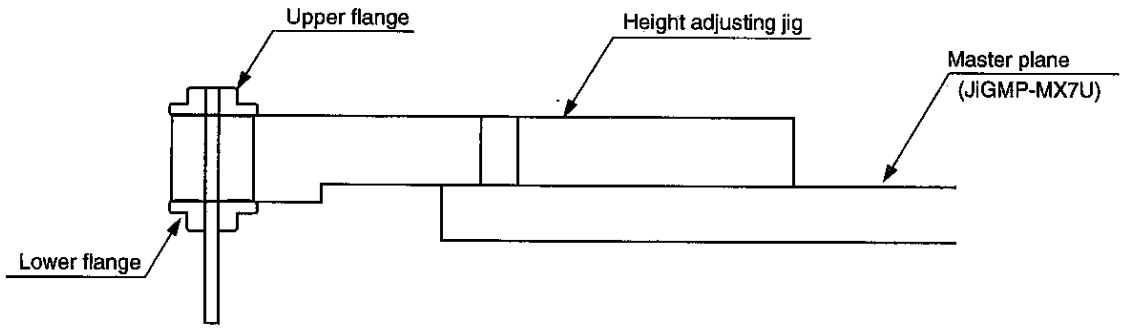


Figure 3

(2) Adjusting the Si roller

1.Play back the thin tape such as P6-120MP to set the V/SR mode.

2.Ascertain that the tape is not folded on the lower flange (2) of Si roller (1). (Figure 4)
If tape folding is found, turn the upper flange (3) of Si roller (1) with the driver (clockwise) to eliminate the folding.

3.Play back the alignment tape (JiGWR2-1CP).

4.Adjust the Sup GR and Tu GR by the procedure described in section 4-2 above.

5.After V/S F,R perform playback so as to ascertain that the waveform rises horizontally within 2 seconds.

6.Unless the normal waveform is obtained (Figure 5), turn counterclockwise the upper flange (3) of Si roller (1), and repeat the step (5) above. Repeat the steps (5) and (6) until the normal waveform is obtained. At this time ascertain that the inlet travel does not change in the normal playback state. If any change is found, adjust the Sup GR, and redo the step (5).

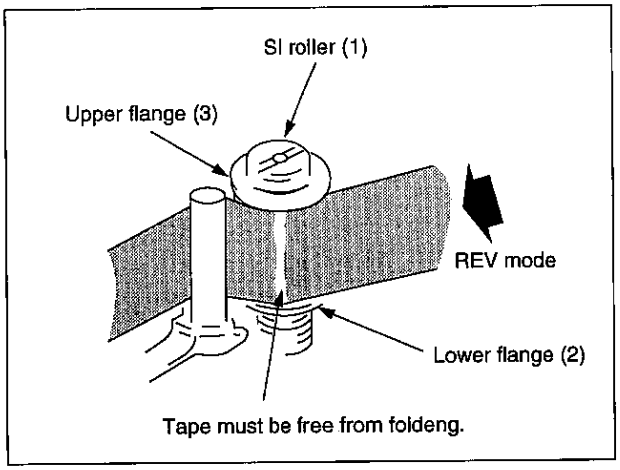


Figure 4

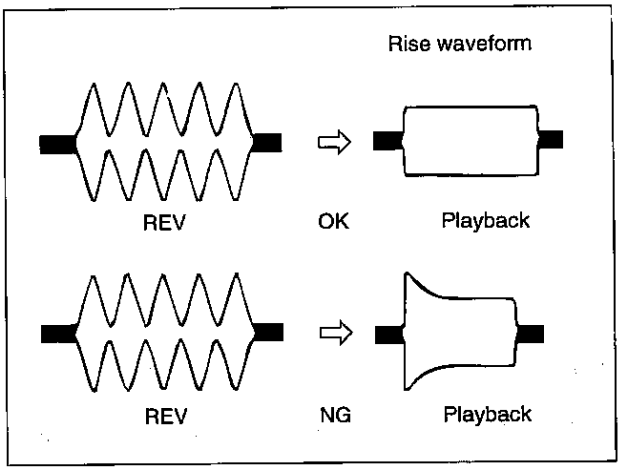


Figure 5

4-4-4. Adjusting the Tu guide

After replacement of Tu guide preset and adjust the height.

(1) Tu guide height presetting

Adjust the height from the upper surface of mechanism chassis to the upper surface of lower flange with the aid of jig.

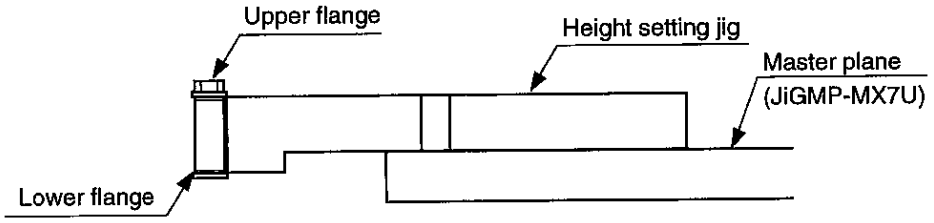


Figure 6

(2) Adjusting the Tu guide

1. Play back the Tu guide adjustment cassette (or the No.7 guide adjustment cassette for E30).

2. Check that the tape runs at the same height near the capstan shaft in case of V/S F and V/S R.

3. If the tape running position in case of V/S R is higher than the tape running position in case of V/S F, turn clockwise the Tu guide nat.
If the tape running position in case of V/S R is lower than the running position in case of V/S F, turn counterclockwise the Tu guide nat.

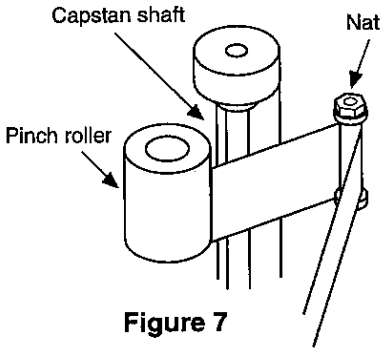


Figure 7

4-4-5. Checking the V/S F and R waveforms

(1) Play back alignment tape (JiGWR5-5CSP or VR2DBOPS), and set the V/S R mode. At this time ascertain that the waveform crest pitch is kept constant for more than 5 seconds.

(2) Set the V/S F mode. At this time ascertain that the waveform crest pitch is kept constant for more than 5 seconds. Unless the constant pitch is obtained, execute the checks of Section 4-2, 3, and 4.

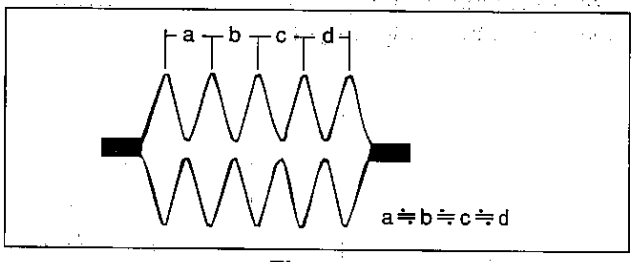


Figure 8

4-4-6. Checking after adjustment

(1) Envelope check

1. Play back the alignment tape (JiGWR2-1CP/VR2DBOPS).
2. Ascertain that the envelope maximum to minimum ratio is 65% or more. (Figure 9)
3. Ascertain that the waveform does not change remarkably. (Figure 10)

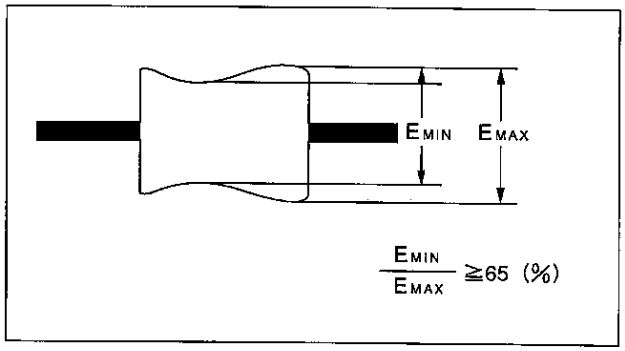


Figure 9

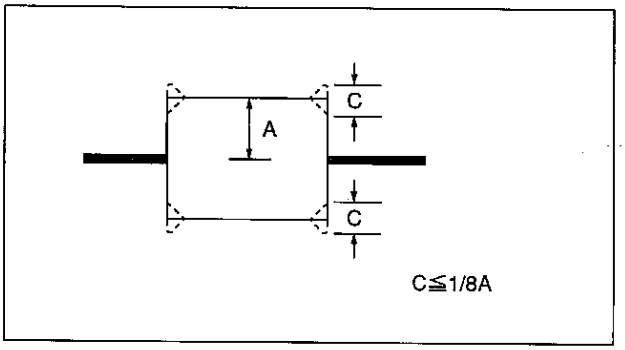


Figure 10

(2) Rise check

1. Play back the alignment tape (VR2DBOPS).
2. Once eject the cassette, and then load it again.
3. Set the playback mode, and ascertain that the RF waveform rises horizontally within 2 seconds. At this time ascertain that there is no tape slackness near the pinch roller.
4. After V/S F, R and FF/REW execute playback, and ascertain that the RF waveform rises horizontally within 2 seconds. At this time ascertain that there is no tape slackness near the pinch roller.

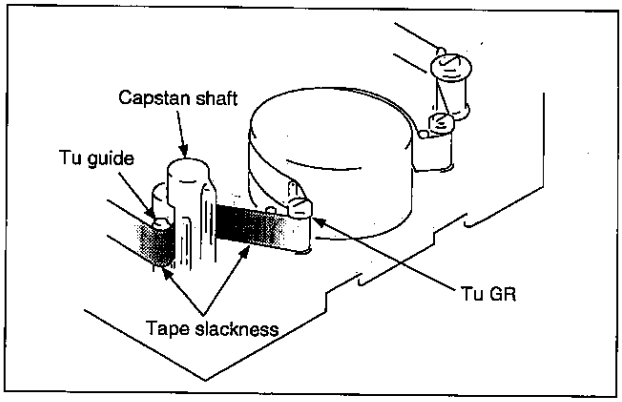


Figure 11

(3) Checking the tape travel

1. When the thin tape such as P6-120MP or P5-90MP is played back, ascertain that tape lift and tape curl of 0.3 mm or more do not occur at the lower flange of SI roller, upper flange of Sup GR, upper flange of Tu GR, and upper/lower flange of Tu guide.

2. In case of V/S F and R ascertain that no curl is found at each flange.

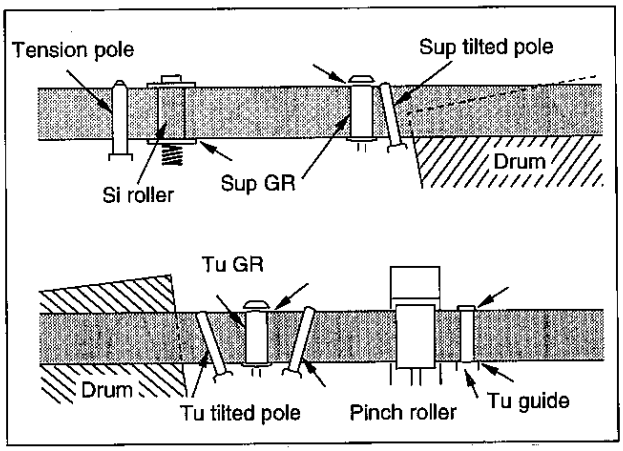


Figure 12

4-4-7. Checking and adjusting the playback switching point

Refer to the description of playback switching point adjustment in section of VCR circuit adjustment.

4-5. Mechanism assembling and parts replacement (disassembling and assembling)

Below is given an explanation of assembling of mechanism and its parts replacement.

The removal of cabinet and Circuit Board is explained in the relevant service manual.

Notes

1. After removal of cut washers be sure to replace them with new ones.

2. Do not place the mechanism upside down on the table. Otherwise, the mechanism part may be deformed or damaged, resulting in malfunction.

3. When assembling, take care so that screw, washer or other foreign substance do not enter. Otherwise mechanism malfunction may occur.

4. Be sure to use the specified cleaning liquid, oil, grease and screw lock as listed below. Otherwise mechanism malfunction may occur.

   Oils: 1) Cosumo Oil Co., Ltd.
   COSMOHYDRO HV100

   Greases: Dow Coaning
   MORYCOAT YM-103/X5-6020

   Screw lock: THREE BOND
   1401B

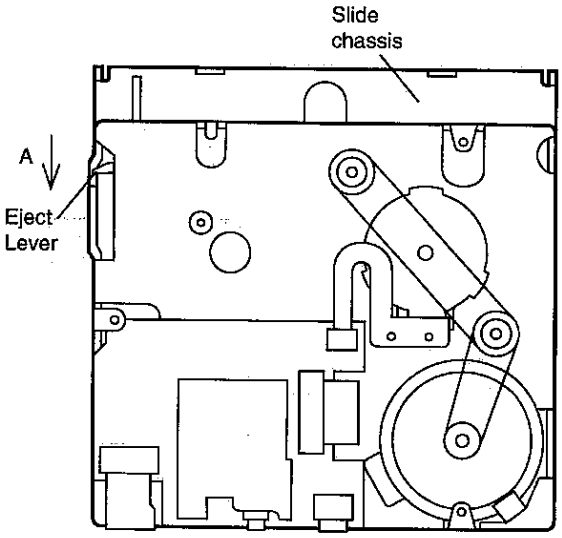
   Cleaning liquid: Industrial-use ethyl alcohol

4-5-1. Mechanism modes

To actuate the mechanism, apply DC3 to 4V to the L motor ((2) in Figure 4). At this time the L motor connector must have been disconnected in advance.
Below is given an explanation of the mechanism mode necessary for mechanism check, adjustment and replacement.

(1) [EJ (Eject)] mode (See Figure 1)

In this mode, it is mechanically positioned to eject the cassette. It is the position where the EJECT lever is moved the farthest in the direction A in the S/B mode. (In this mode, the cassette compartment assembly can not be locked.)

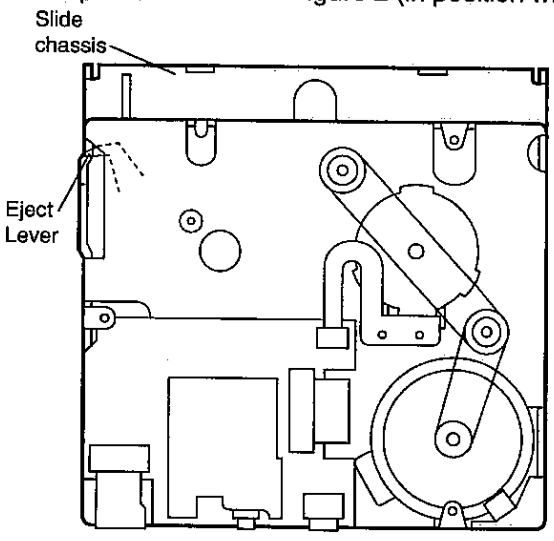


[EJ] mode

Figure 1

(2) [S/B (Standby)] mode (See Figure 2)

When the cassette is loaded, the mechanism is set to the S/B mode. In this mode the slide chassis is most far from the drum. In this mode the Eject lever is in position shown in Figure 2 (in position where the cassette control ass'y can be locked).

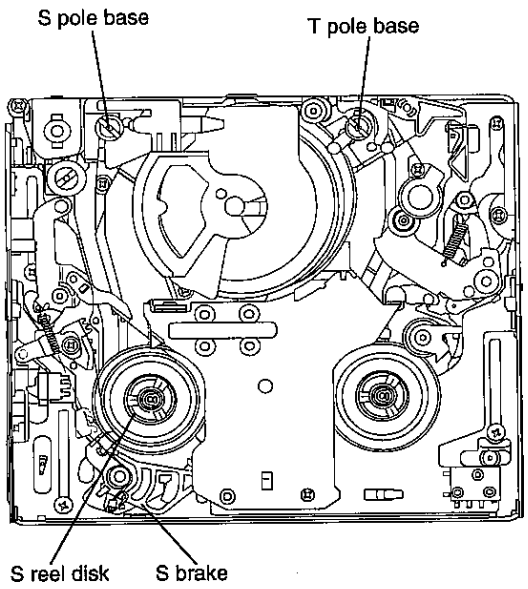


[S/B] mode

Figure 2

(3) STOP mode (See Figure 3)

In the STOP mode the S.T pole base is depressed in the STOP position (or Rec Lock position in CAMERA mode), and the S brake is in contact with the S reel disk.

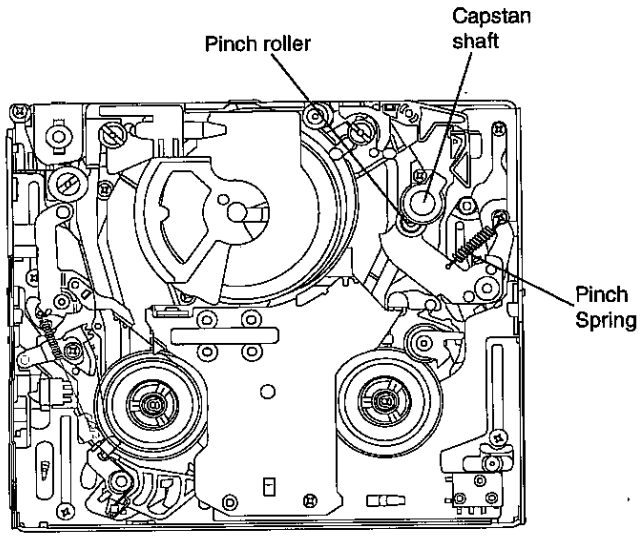


STOP mode

Figure 3

(4) PB mode (See Figure 4)

In this mode, it is positioned for the replay, record and so on. It is the mechanical position where the pinch roller is pressed against the capstan shaft to make the pinch-pressing spring the most longest.



PB mode

Figure 4

4-5-2. Cassette control ass'y

<Disassembling>

(1) Set the unit to the EJECT mode, and let the housing stand upright. Or set the unit to the STANDBY mode, press the lock lever in the arrow direction, and let the housing stand upright. (See Fig 5: in the direction ⓐ or ⓑ) (When pushing in the direction ⓐ, slightly lift the housing by hand to release the lock lever.)
(2) Remove the four screws ② and take out the down guide ③.
(3) Slide the two link support shafts ⓒ and the two roller shafts ⓓ to the round openings ⓖ on their respective slide chassis slits (two at ⓔ and two at ⓕ).
(4) Deflect the roller shafts ⓓ a little inward to get them out of the round openings ⓖ on the slide chassis. (Be careful not to deform the inner links.)

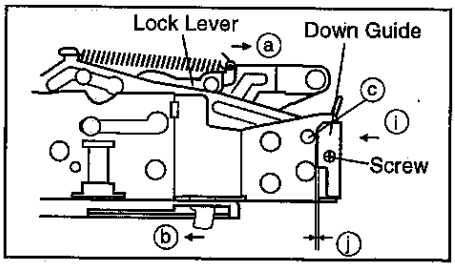


Figure 5. Lock lever section

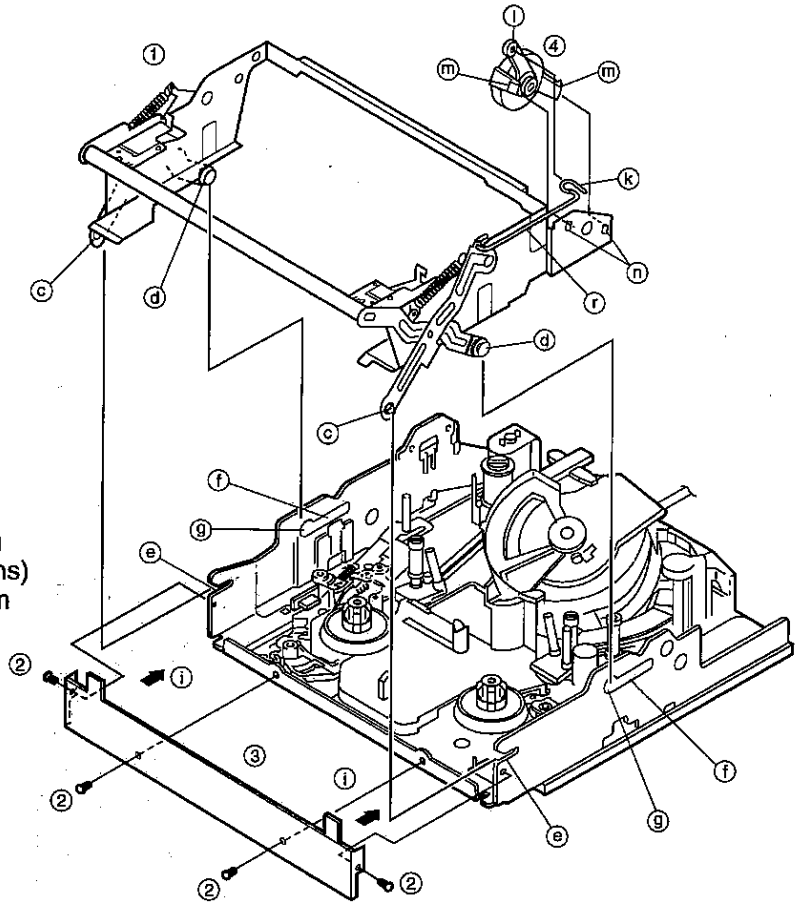


Figure 6.

<Reassembling>

(1) Set the unit to the STANDBY mode.
(2) Deflect the roller shafts ⓓ a little inward, and fit them into the round openings ⓖ on the slide chassis. (Be careful not to deform the inner links.)
(3) Align the flanges of roller shafts ⓓ with the slide chassis slits ⓕ. While sliding the flanges, fit the support shafts ⓒ in the slide chassis slits ⓔ, and slide them until they reach the slits.
(4) Attach the down guide. (While pressing the guide in the direction ⓘ, tighten the screws until the gap ⓙ between the down guide ③ and the support shafts ⓒ becomes zero.)
Tightening torque: 70±7 mN·m (0.7±0.07 kg·cm)

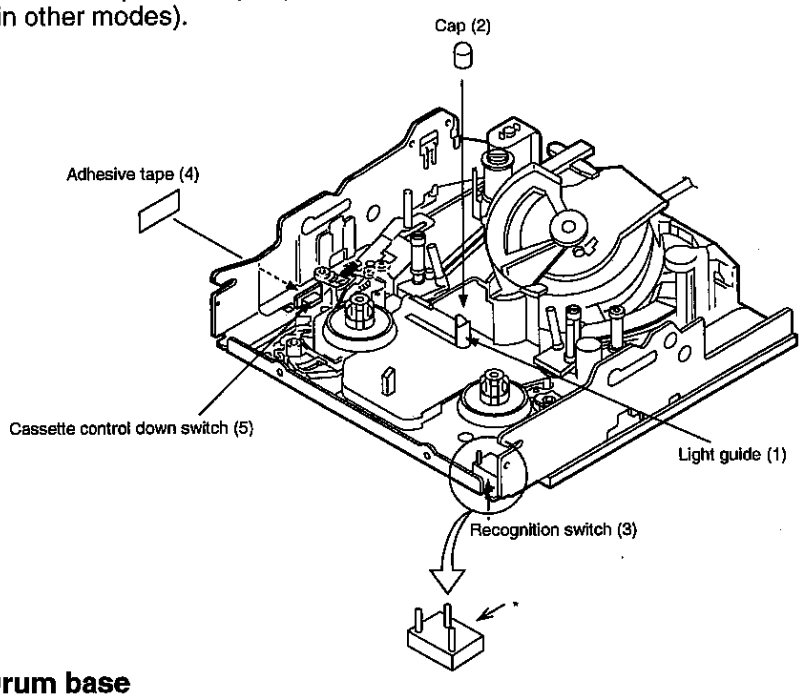
4-5-3. Actuating the mechanism with the cassette control ass'y removed

(1) Turn on the power supply with the cabinet and camera unit removed, referring to the Service Manual (so as to actuate the mechanism).

(2) Put the cap (2) on the light guide (1).

(3) Press the cassette control down switch (5) through the adhesive tape (4) in the arrow direction so as to turn it on. At this time take care to avoid contact with the cassette. Keep the switch pressed (if the switch is turned off, unloading occurs).

Note: To set the Rec mode, press the pin (marked with the asterisk *) of recognition switch (3) (this operation is not necessary in other modes).



4-5-4. Drum and Drum base

Removal

* To replace the upper drum, be sure to put on gloves. Due care is required so that the drum is not damaged.

(1) Drum base

Remove the 3 mounting screws as shown in Figure 1, and remove the drum base.

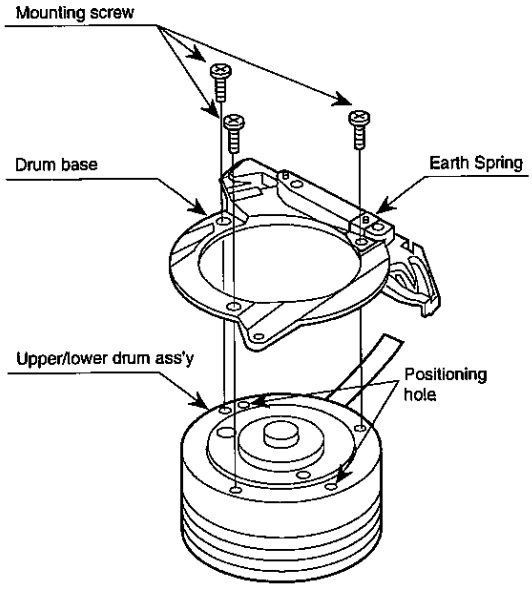


Figure 1

(2) Drum motor stator

Remove the stator mounting screw with the hexagonal wrench as shown in Figure 2, remove the motor stator, and remove the earth brush. At this time take due care so as not to deform the earth brush.

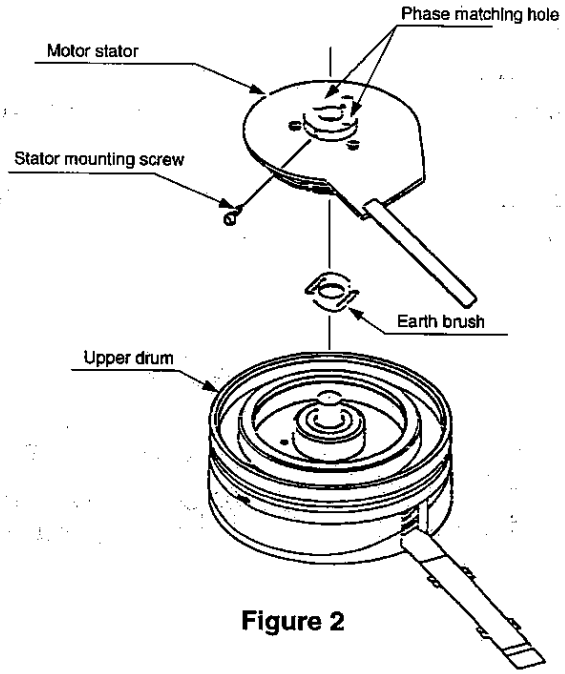


Figure 2

(3) Upper drum ass'y

Remove the upper drum ass'y from the lower drum ass'y as shown in Figure 3.
At this time take care so as not to lose the gap shim.

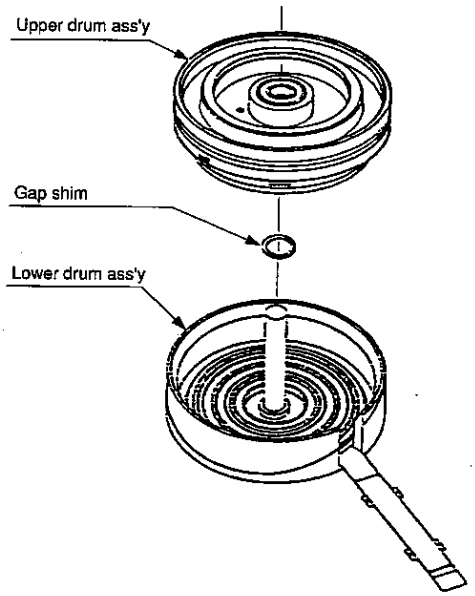


Figure 3

(4) Motor rotor

Remove the 2 rotor mounting screws as shown in Figure 4, and remove the motor rotor.

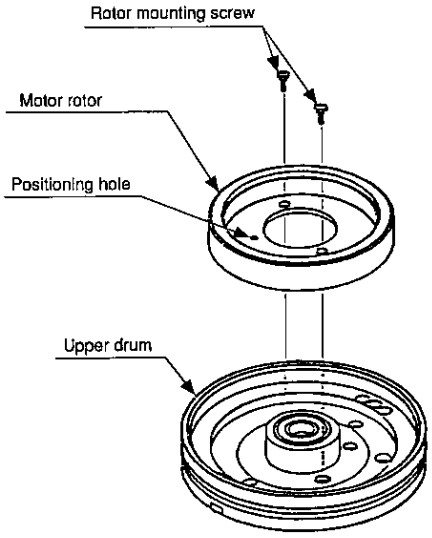


Figure 4

(5) Rotary transformer rotor ass'y

Loosen the rotor ass'y mounting screw with hexagonal wrench as shown in Figure 5 (complete removal is not required), and remove the rotor ass'y.

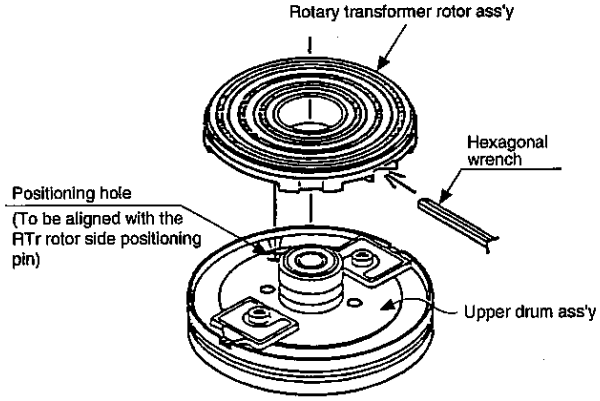

Rotary transformer rotor ass'y
Hexagonal wrench
Positioning hole
(To be aligned with the RTr rotor side positioning pin)
Upper drum ass'y

Figure 5

Installation

Install the upper drum in the reverse order of removal.

(1) Rotary transformer rotor ass'y

Clean the contact surfaces of rotor ass'y holder and upper drum ass'y, and ascertain that there are no contamination and flaws. (Figure 6)
Then, make an alignment so that the positioning pin of rotor ass'y can be inserted into the positioning hole of upper drum ass'y. Keeping the rotor ass'y tight fitted to the upper drum ass'y, tighten the rotor ass'y mounting screw with the hexagonal wrench (tightening torque 0.45 kg.cm).

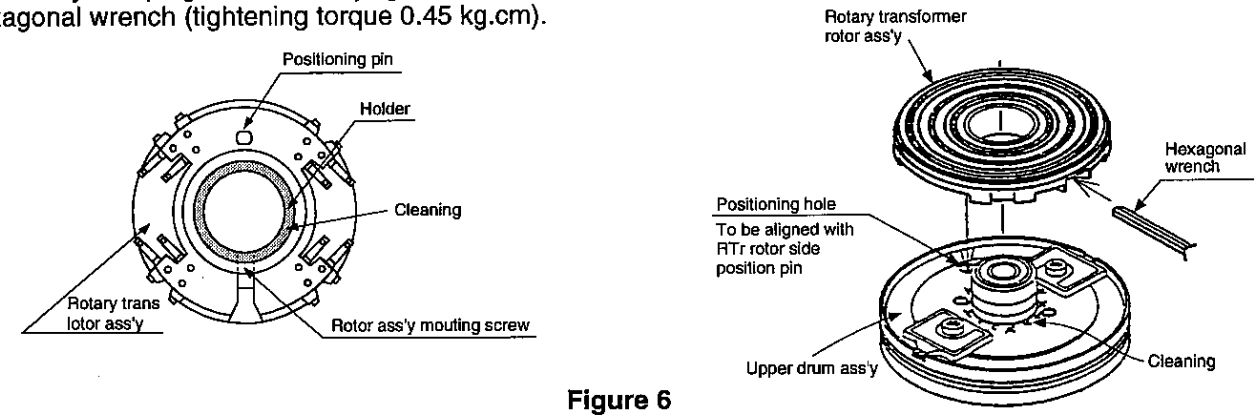


Figure 6

(2) Motor rotor

Align the motor rotor positioning hole with the Comb. head side, and tighten the rotor mounting screw. (Figure 7)

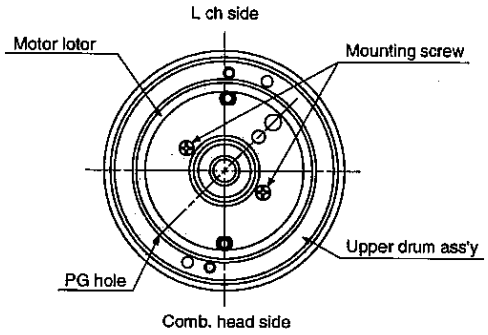


Figure 7

(3) Upper drum ass'y

After fitting the gap shim which was removed when the upper drum ass'y was dismantled to the shaft of lower drum ass'y, fit the upper drum ass'y. (Figure 8)
At this time slightly turn the upper drum ass'y by hand to ascertain that RTr does not scrape. If scrape is found, replace the gap shim with the gap shim packaged together with the replacement upper drum ass'y.

(4) Drum motor stator

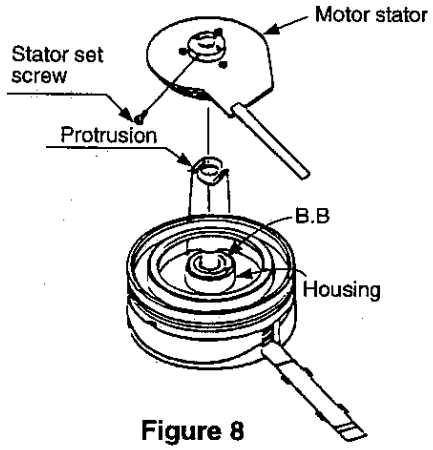
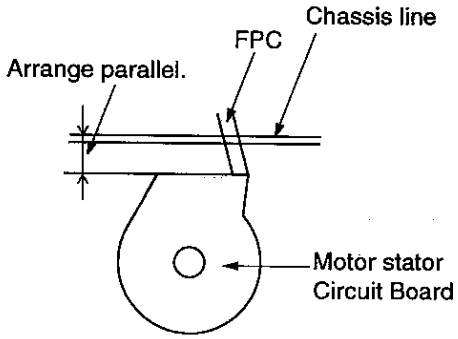


Figure 8

Fit the earth brush, and install the motor stator. At this time discriminate the front and rear sides of brush. The convex part must be downward (must contact B.B).
Apply pressure (0.7 kg) to the motor stator, and tighten the stator mounting screw (tightening torque 1.5 kg.cm).
The stator must be installed so that the chassis line and motor stator straight part are nearly parallel when it is installed on the chassis.



(5) Drum base

Align the positioning pin, and tighten the screws (3 pcs.).

(6) Drum ass'y

Install the drum ass'y on the main chassis, and tighten the screws (3 pcs.).

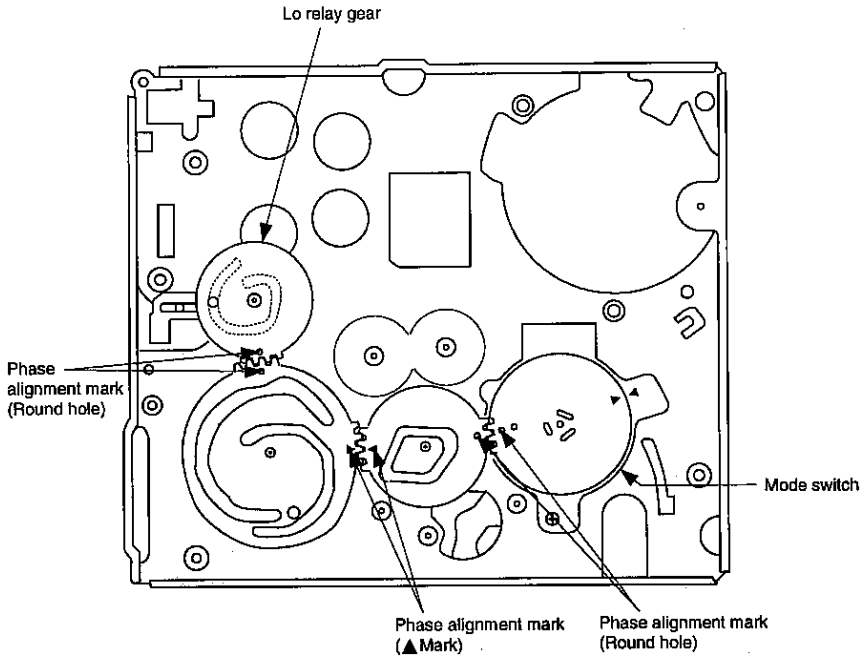
(7) Tape guide

Align the positioning pin, and tighten the screw (one pc.).

4-5-5. Phase matching

The phase of the following parts must be matched as shown in the figure below.
(Ascertain that the ▲ marks and round holes align.)

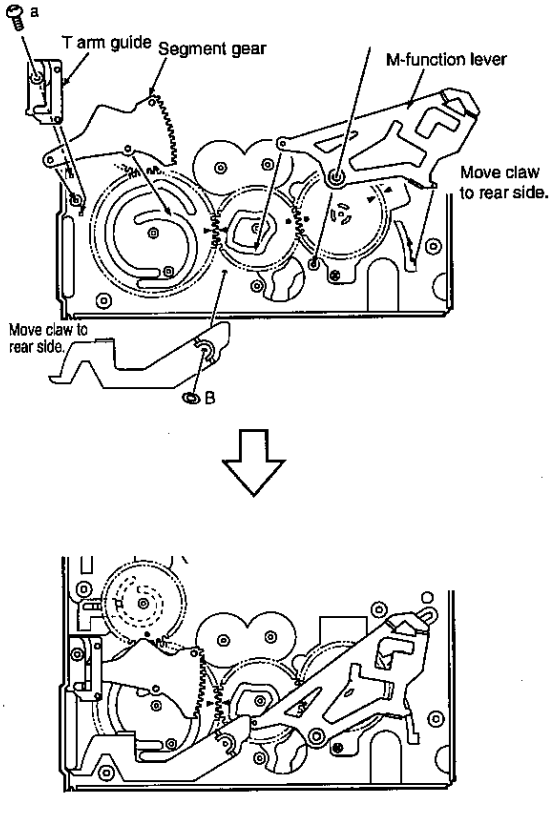
(1) Lo relay gear (2) Main cam (3) Sub-cam (4) Mode switch



4-6. MECHANISM ASSEMBLING METHOD

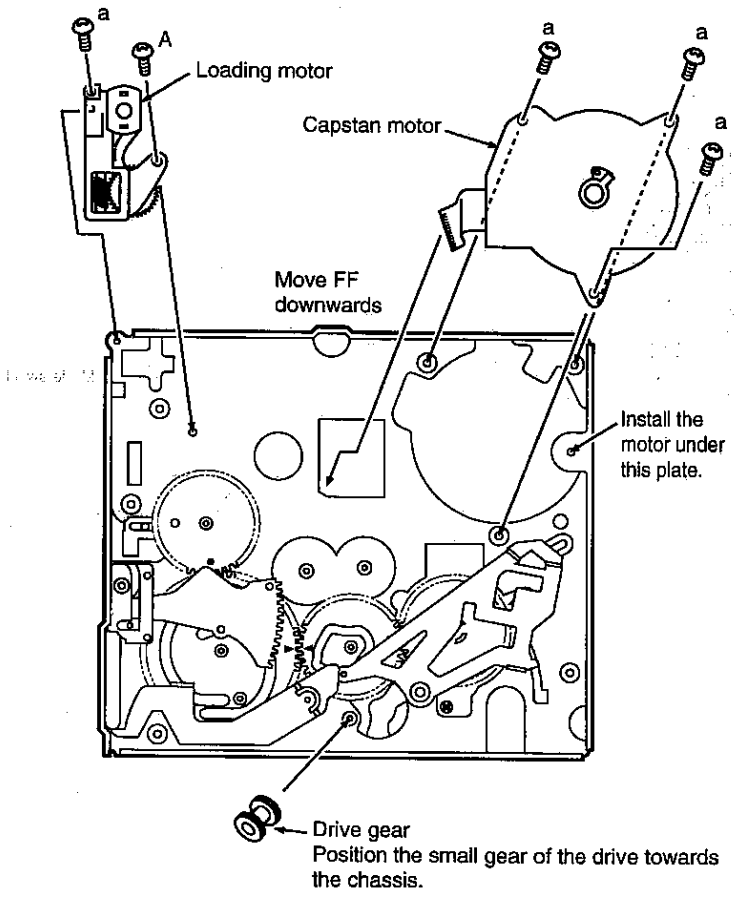
(1) Adjust the phase of each part.
(2) Install screws and washers.
(3) Install the segment gear, T arm guide and the M-function lever. Install the eject lever.

	Item	Tightening torque	Quantity
a	S Tight M1.4 x 3	70mN•m (0.7kgf•cm)	1

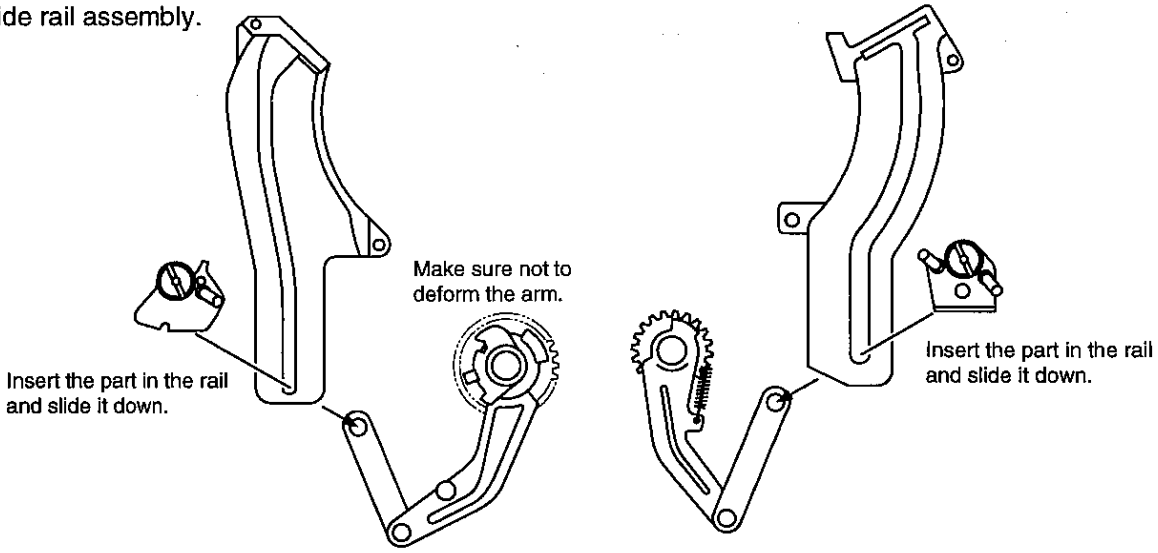


(4) Install the loading block assembly and the capstan motor.
(5) Install the drive gear. At this time, pay attention to the direction of gear. (The small gear must be located in the chassis side.)

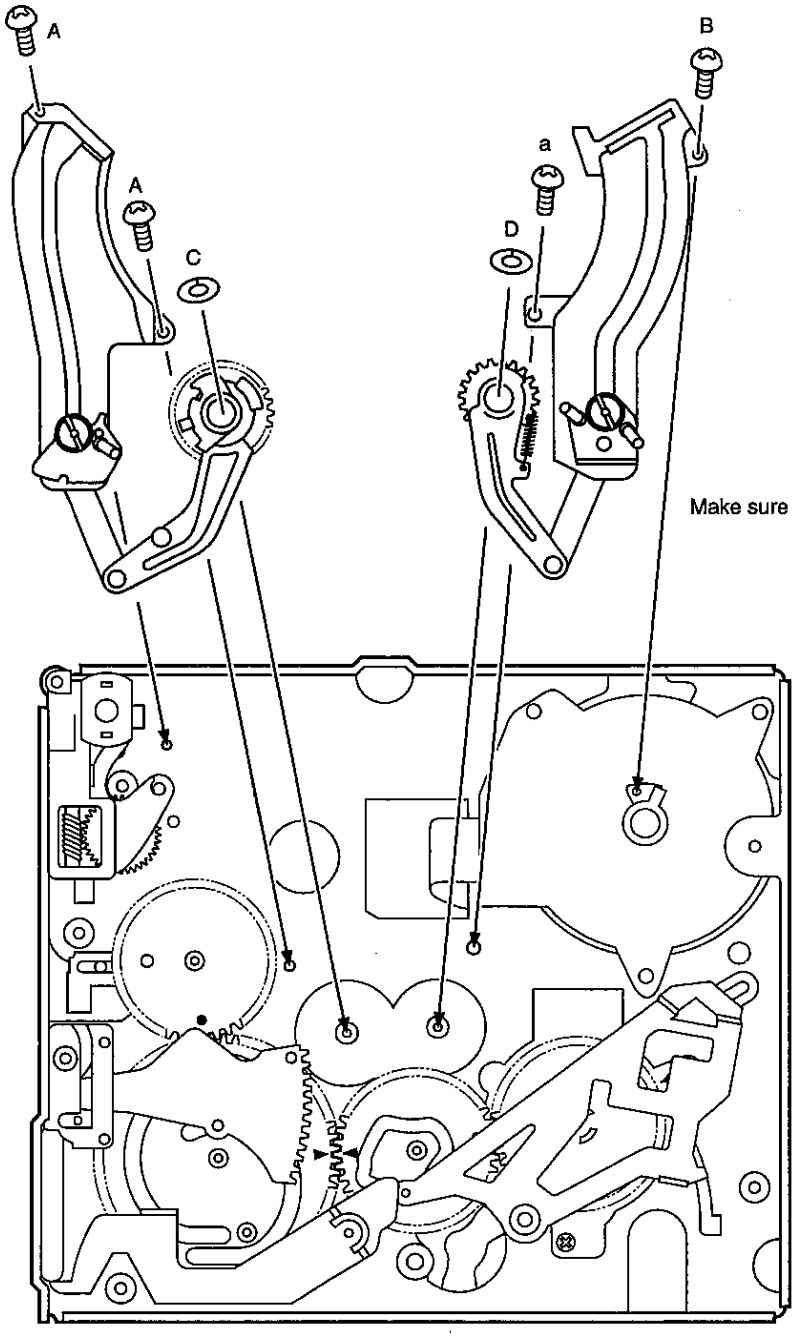
	Item	Tightening torque	Quantity
A	S Tight M1.4 x 2.5	70mN•m	5
a	S Tight M1.4 x 3	70mN•m	



(6) Install the guide rail assembly.

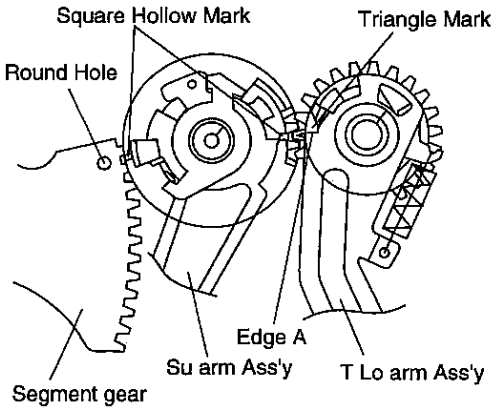


(7) Install the guide rail assembly taking care to position it correctly.



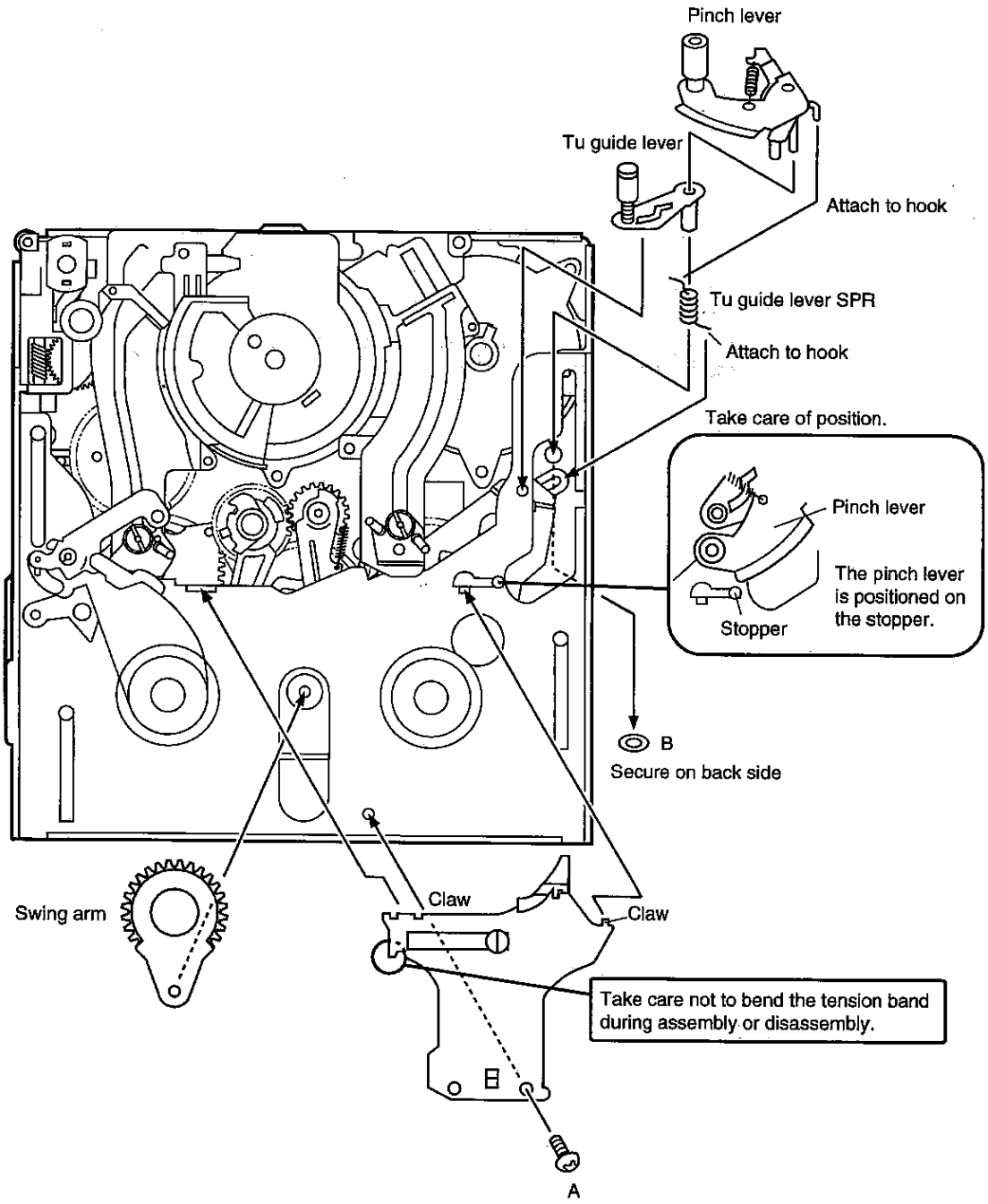
	Item	Tightening torque	Quantity
A	S Tight M1.4 x 2.5	70mN•m	3
B	S Tight M1.4 x 4	40mN•m	1
C	ø0.8-ø3.0-t0.2		1
D	ø2.1-ø5.0-t0.25		1
a	S Tight M1.4 x 3	70mN•m	

Align the marks on the parts.



(12) Install in the following order: T guide lever spring, T guide lever, pinch lever.
(13) Install the swing arm.
(14) Install the right guide holder.

	Item	Tightening torque	Quantity
A	S tight M1.4 x 2.5	70mN•m	1
B	CW ø0.8-ø3.0-t0.2	70mN•m	1



5. ADJUSTMENT OF VCR

5-1. ADJUSTMENT OF VCR SECTION

5-1-1. Before starting the electric circuit adjustment

- Electric circuit adjustment becomes necessary, in most cases, when any of the wear mechanical parts or the video head has been replaced. Before starting the electric circuit adjustment, be sure to check that the mechanical parts work well (i.e., the mechanical parts have all been perfectly adjusted). In case a trouble or troubles are found in the electric circuitry, be sure to pinpoint the cause(s) by using the measuring instruments described below. After locating the trouble spot(s), then proceed to repair, replacement or adjustment. Do not change the positions of the controls when adequate measuring instruments are not available.
- In order to implement a higher-density, smaller machine, most of the electric circuit parts used on the Circuit Boards are of small-sized, surface-mounted type. For replacing part(s) as after-sales service, work with a soldering iron as speedily as possible. The heat resistance of the surface-mounted components is poor, when compared with the larger-sized discrete parts used for television sets and stationary decks, owning to their small sizes. Therefore, exercise due care to avoid long-time exposure of the pins of these parts to the heat of the soldering iron which may possibly damage them. Such care should be exercised especially for chip-layer capacitor replacement. It is advisable to use a temperature-controlled ceramic soldering iron (temperature at the tip: 250°C, contacting time: less than 5 seconds).

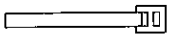
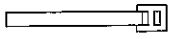
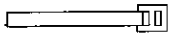
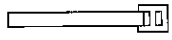
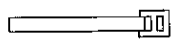
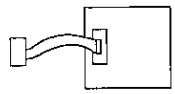
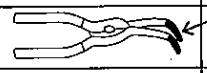
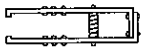
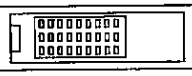
< Adjusting the video/LCD section >

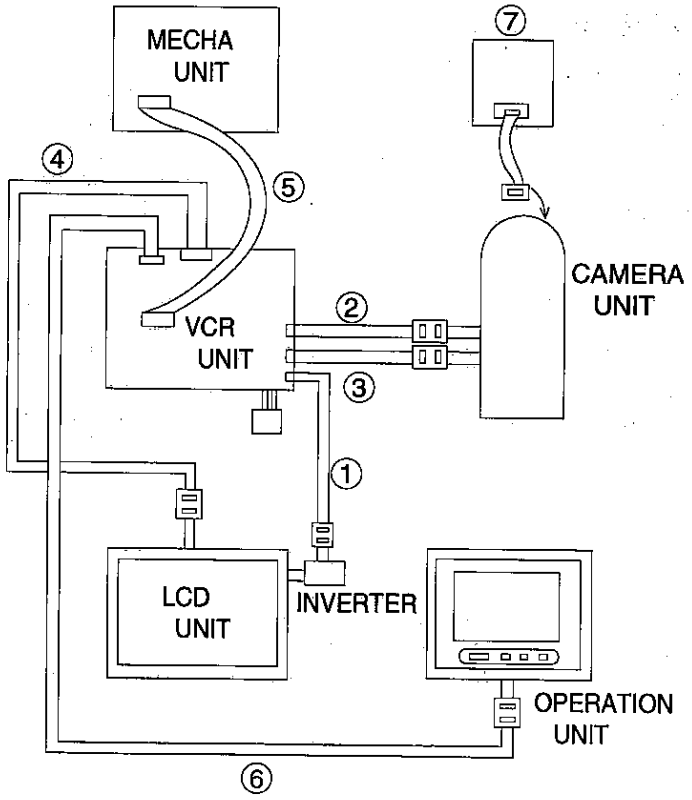
- Measuring instruments:
  - *Color monitor TV set
  - *Digital voltmeter
  - *DC power supply
  - *Audio generator (CR oscillator)
  - *Alignment tapes (JiGWR5-5CSP)
  - *AC adapter
  - *AV output cable (accessory)
  - *Oscilloscope
  - *Vector scope
  - *Frequency counter
  - *Signal generator (NTSC pattern generator LCG-401/401YC: Leader-made)
  - *Video recording tape (For Y/C, audio and servo adjustments)
  - *DC cable (AC adapter accessory)
  - *Video extension cables

7-1-2. Servicing the VCR section Adjustment

7-1-2-1. Typical connections

Extension Cable etc.

NO.	NAME	PART NO.	Code	CONFIGURATION	REMARKS
1	Extension Cable Inverter~VCR (7pin)	QCNW-1265TAZZ	AX		
2	Extension Cable Camera~VCR (17pin)	QCNW-1380TAZZ	BD		
3	Extension Cable Camera~VCR (19pin)	QCNW-1381TAZZ	BD		
4	Extension Cable LCD~VCR (24pin)	QCNW-1382TAZZ	BD		
5	Extension Cable MECHA~VCR (70pin)	QCNW-1534TAZZ	BS		
6	Extension Cable VCR OPE~VCR (15pin)	QCNW-1311TAZZ	BA		
7	OSD Adjustment Board connected to Camera (26pin)	RUNTK0309TAZZ	CB		
8	Connector fitting and withdrawing extractor				insulating sleeve
9	Connector fitting and withdrawing tweezers	9EQPiNSET06GE	BR		
10	Service remote control	RRMCG0033TASA	BT		



• Types of test modes

TEST No.	Title	Contents	Sensor on/off
1	Sensors off	All sensors but the cassette controller switch, dew sensor and batterysensor stay off.	
3	Automatic battery sensor adjustment	Battery sensor's input voltage put in memory.	
4	Battery adjustment error display	Battery sensor's adjustment errors are displayed at the right of the "past errors" area.	All sensors on All but sensors on
5	PASS mode	Track shift mode (1/4 shift)	All sensors on
6	Camera adjustment mode	Camera adjustment mode	[VCR interrupted]
7	VCR adjustment mode	VCR adjustment mode	
8	Automatic switching point adjustment (STOP ADJ)	Play standard tape and call this mode. Switching point is automatically adjusted.	

① When the battery adjustment mode is selected from the camera adjustment mode with a cassette with the erase protection tab, the VCR is automatically put in the REC mode.

• Below discussed are these eight test modes.

① [TEST No. 1] Sensors off mode
All the sensors, except for the cassette controller switch, dew sensor and battery sensor, stay off. This enables to bring the VCR in the loading mode without tape. The VCR/camera performance can now be checked with no tape inside.

② [TEST No. 3] Automatic battery alarm adjustment
Used to automatically adjust the voltage level which makes the "battery" appear on the LCD display.

③ [TEST No. 4] Battery alarm check/error display
• The difference between the preset battery alarm voltage and the current supply voltage is displayed as follows.
• A past error is displayed at the right of the current battery alarm error.

④ [TEST No. 5] PASS mode
Used to adjust the tape travelling condition. The tracking is shifted by 1/4 from the center to make the tape running-related RF envelope fluctuations easier to observe.

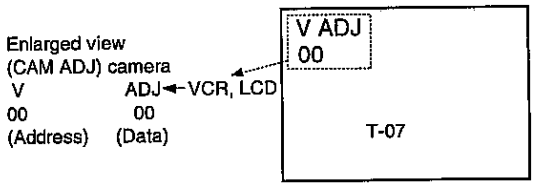
⑤ [TEST No. 6] Camera adjustment mode
Used to adjust the camera section. (For details, see Servicing the Camera Section.)

⑥ [TEST No. 7] VCR adjustment mode
Used to adjust the VCR section. (For details, see Servicing the VCR Section.)

⑦ [TEST No. 8] Automatic switching point adjustment
Used to automatically adjust the playback switching point. (For details, see Automatic Adjustment of the Playback Switching Point.)

5-1-2-2. Setting up the VCR section adjustment mode (camera section adjustment)

- Select adjustment items by using addresses. Rewrite the adjustment data to change the settings. Below shown the adjustment procedures and on-screen display.



	Procedural steps	Display (: flashing)
①	Turn up or down the flashing hexadecimal number with the FF or REW key to select the address of a desired adjustment item. (Initial address: 00H) Note: The addresses change as follows. 7E — 7F — 00 — 01 — 02	V ADJ
②	Press the PB key to read the data of the selected address.	V ADJ 2C A3
③	Turn up or down the data setting with the FF or REW key. The data display starts flashing.	V ADJ 2C
④	Press the PB key again to write the data setting into the selected address.	V ADJ 2C 72
⑤	Press the STOP key in the above step ② or ④, and the screen returns back to the step ①.	V ADJ

When the FF or REW key is held down for 0.3 second or longer, the address selection is repeated in cycles of 100 msec. The data setting changes by ± 4 by holding the key down for 2 seconds or longer.

5-1-2-3. Battery shut-off voltage adjusting method

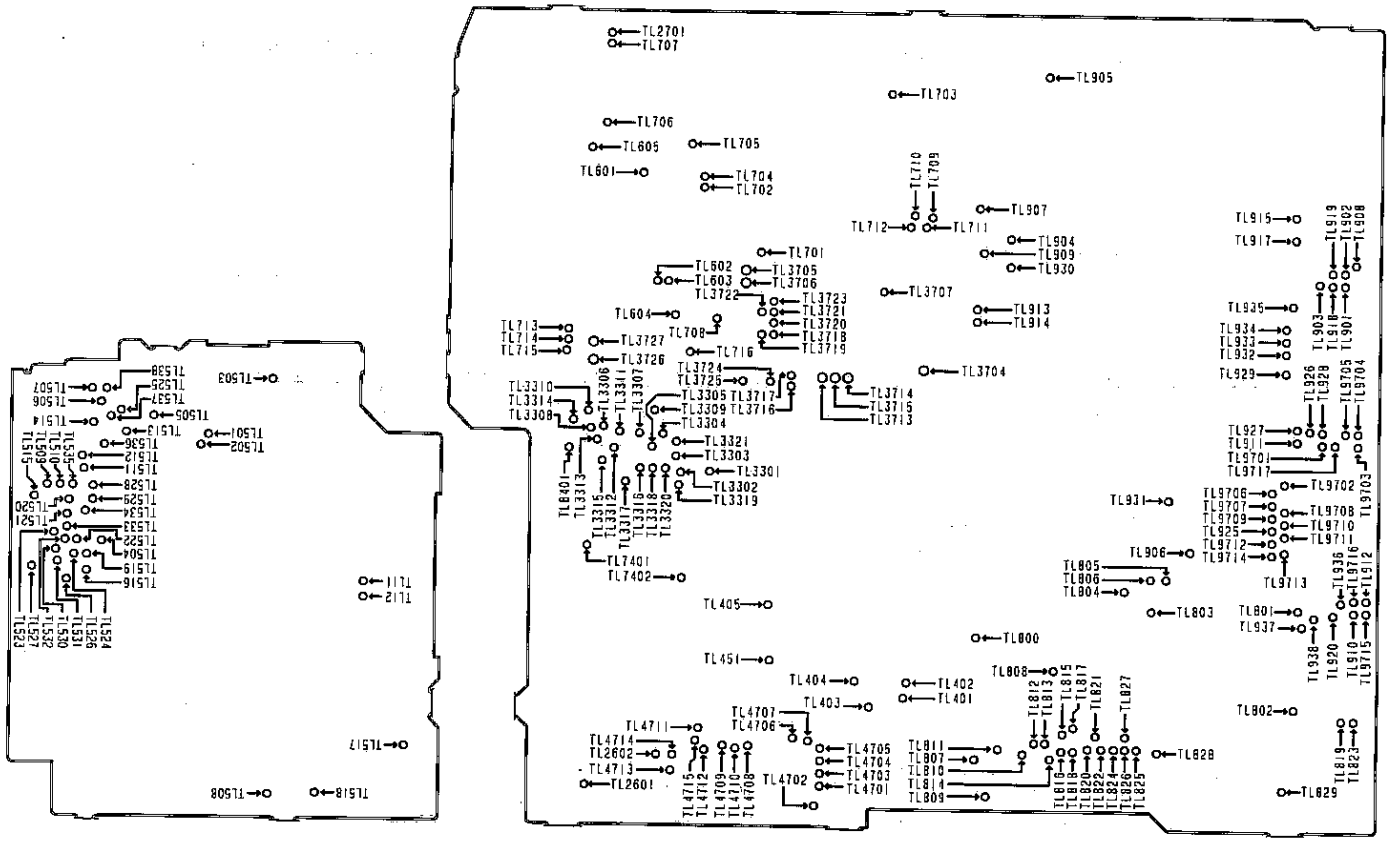
1) Supply power to the main unit, using the variable-voltage DC power supply (range of 2.5V to 5V).
2) Set the CAM/OFF/VCR SW to CAM to switch to the camera mode.
3) Load a recordable tape and set the main unit to CAM REC. PAUSE.
4) Set the main unit to TEST mode No. 3, and start recording.
5) Measure voltage between TL901(+) and TL903(GND), and adjust the supply voltage to 3.0V.
6) The adjustment is complete if "BATTERY" is displayed on the monitor screen for a second when the PLAY key of operation unit is pressed.
7) The adjustment is regarded as proper if the auto shut-off is actuated after the warning is displayed when the TEST mode is cancelled.

* In case of automatic adjustment of shut-off voltage, adjustment is impossible if voltage is above 3.0V ± 0.2V. If the adjustment is made at 2.9V or below, the low-voltage operation may become unstable.

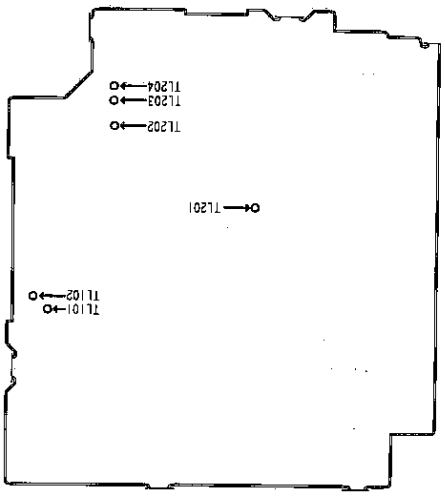
5-1-3. Adjusting the VCR circuit

• Test Points on the Video Circuit Board

Side A

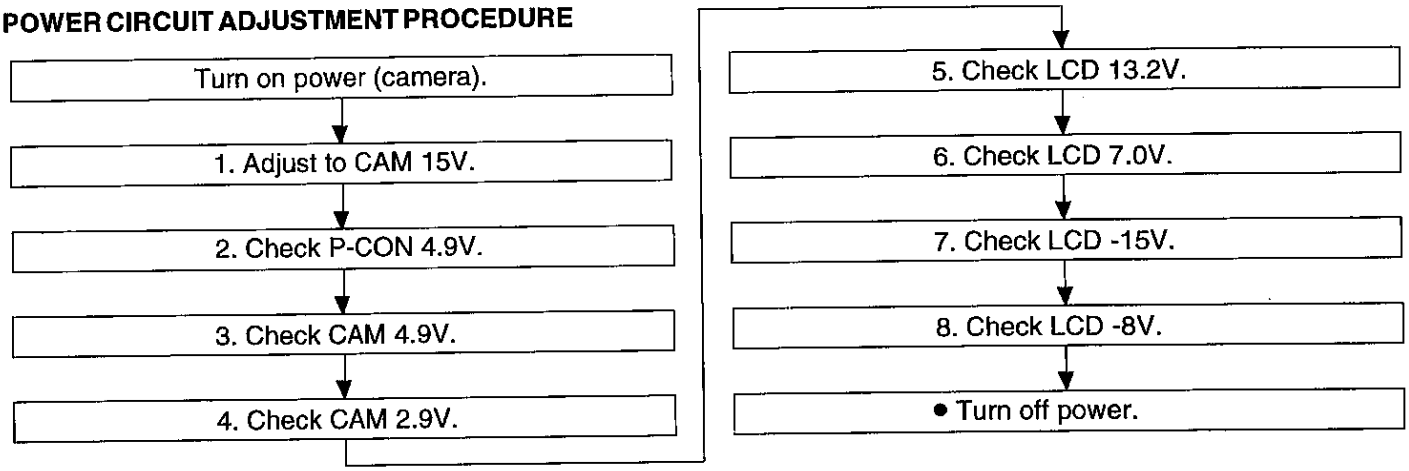


Side B



5-1-3-1. Adjusting the power circuit

POWER CIRCUIT ADJUSTMENT PROCEDURE


Turn on power (camera).
1. Adjust to CAM 15V.
2. Check P-CON 4.9V.
3. Check CAM 4.9V.
4. Check CAM 2.9V.
5. Check LCD 13.2V.
6. Check LCD 7.0V.
7. Check LCD -15V.
8. Check LCD -8V.
• Turn off power.

POWER CIRCUIT ADJUSTMENT METHOD

- Input 6V from the battery terminal, and set the power switch to the camera side.

1. Adjustment to CAM 15V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 910
Adjustment address	20H
Standard	15.0V ± 0.05V

1) Make an adjustment so that the digital voltmeter indicates 15.0V ± 0.05V.

2. Checking of P-CON 4.9V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 905
Adjustment address	
Standard	4.9V ± 0.1V

1) Check that the digital voltmeter indicates 4.9V ± 0.1V.

3. Checking of CAM 4.9V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 906
Adjustment address	
Standard	4.9V ± 0.1V

1) Ascertain that the digital voltmeter indicates 4.9V ± 0.1V.

4. Checking of CAM 2.9V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 931
Adjustment address	
Standard	2.9V ± 0.1V

1) Ascertain that the digital voltmeter indicates 2.9V± 0.1V.

5. Checking of LCD 13.2V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 914
Adjustment address	
Standard	13.2V ± 0.2V

1) Ascertain that the digital voltmeter indicates 13.2V± 0.2V.

6. Checking of LCD 7.0V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 913
Adjustment address	
Standard	7.0V ± 0.25V

1) Ascertain that the digital voltmeter indicates 7.0V± 0.25V.

7. Checking of LCD -15V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 909
Adjustment address	
Standard	-15.2V ± 0.1V

1) Ascertain that the digital voltmeter indicates -15.2V± 0.1V.

8. Checking of LCD -8V

Measuring instrument	Digital voltmeter
Measuring terminal	TL 911
Adjustment address	
Standard	-8V ± 0.5V

1) Ascertain that the digital voltmeter indicates -8V ± 0.5V.

- Turn off power supply.

5-1-4. Adjustment of system controller and servo circuit

5-1-4-1. Adjustment of playback switching point

Measuring instrument	Oscilloscope
Mode	Playback
Adjustment address	30h
Tape	Alignment tape (JiGWR5-5CSP)

1) Play back the adjustment tape (JiGWR5-5CSP)
2) Press the "CONTINUOUS PUSH" and "TEST MODE SELECTION" of adjustment remote controller to set the test mode. At this time the numeral of "TEST01" blinks.)
3) Using the "FF" and "REW" keys, select "TEST08", and press the playback key to set the SW-P adjustment mode.
4) After a while the adjustment is completed, and operation stops automatically. In case of adjustment failure the tape is ejected automatically.

Only in the case when the satisfactory result was not obtained by the adjusting method described above, perform the following adjustment.

1) Connect each signal to the oscilloscope.
   1ch: Video output ... TL801
   2ch: H-SW-P TL405
   GND: GND TL802
2) Play back the adjustment tape (JiGWR5-5CSP)
3) Press the "CONTINUOUS PUSH" and "VCR ADJUSTMENT" of adjustment remote controller to set the VCR adjustment mode.
4) Select the address 30h, set the sync slope of oscilloscope to (–), adjust the data with "REW" and "FF" so that the interval between the trigger point and the V sync signal is set to 6H, and fix the data with the "PLAY" button. (See Figure 5.1.1.)
5) Then, set the sync slope to (+), and ascertain that the interval between the trigger point and the V sync signal has been set to 6H. (See Figure 5.1.2.)
6) Keep the STOP key pressed for about 3 seconds to exit from the adjustment mode.

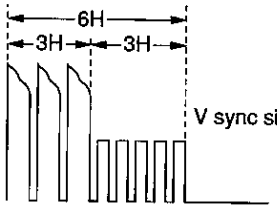


Figure 5.1.1

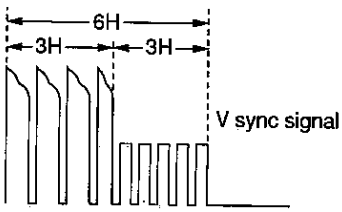


Figure 5.1.2

5-1-5. Y/C circuit adjustment method

Input signal conditions

Video signals generated by a pattern generator are used to make electric adjustments in a Y/C circuit. Thus this signal must conform to the standards prescribed for adjustment signals.

Use an oscilloscope to check that the video signal is terminated with a 75 Ω resistor, the amplitude of the sync signal component, video component and burst signal are approx. 0.3 Vp-p, 0.7 Vp-p and 0.3 Vp-p, respectively and that they are flat. The relative level of the burst signal and the red signal shall be 0.30:0.66.

The color bar used in an electrical adjustment is shown in Figure A.

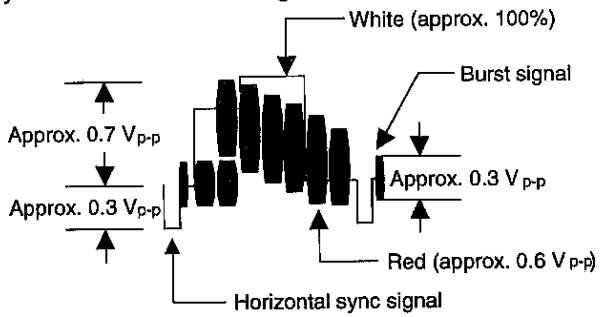


Figure A Color bar signal produced by a pattern generator

*** When a pattern generator is not used**

Shoot a color bar chart (JiGCHART-4) using a perfectly adjusted video camera.

A signal from a perfectly adjusted video camera shooting a color bar chart (JiGCHART-4) can be used as an adjusting signal if the lighting can be set to meet the following conditions: output (75 Ω terminated), the amplitude of the sync signal component, video component and burst signal are approx. 0.3 Vp-p, 0.7 Vp-p and 0.3 Vp-p, respectively. The relative level of the burst signal and the red signal shall be 0.30:0.66. This is shown in Figure B.

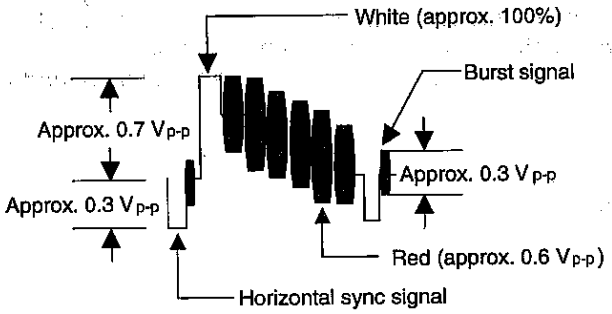


Figure B Color bar signal produced by a video camera

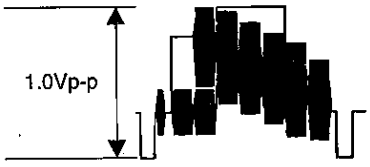
1. Adjustment of fixed data writing

ADD	DATA
23	00
24	00
25	80
26	AB
31	0A
3A	6A
3B	80

(1) Before starting Y/C adjustment, be sure to write the specific data in the addresses listed left.
If the data listed left is written after Y/C adjustment, adjusting values may deviate.

2. Adjustment of input Y level

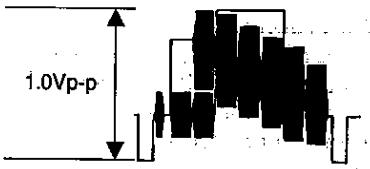
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL801
Adjustment address	32
Adjustment level	1.0 Vp-p ± 40 mVp-p



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 32.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so as to get 1.0 Vp-p between SYNC TIP and WHITE PEAK on TL801.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 32.

3. Adjustment of playback Y level

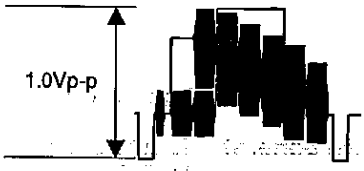
Measuring instrument	Oscilloscope
Mode	PB
Playback signal	Color bar (JiGWR5-5CSP)
Measuring point	TL801
Adjustment address	27
Adjustment level	1.0 Vp-p ± 40 mVp-p



(1) Set the color bar tape for adjustment (JiGWR5-5CSP)
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 27.
Select the address, using the FF or REW key, and fix it with the PB key. (It will automatically set the playback mode.)
(3) Make an adjustment so as to get 1.0 Vp-p between SYNC TIP and WHITE PEAK on TL801.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 27.

4. Adjustment of Y-FM carrier f0

Measuring instrument	Frequency counter
Mode	VCR STOP
Input signal	No input
Measuring point	TL7401
Adjustment address	33
Adjustment level	4.20 ± 0.02 MHz



(1) Input the no-signal into the video input/output terminal in the VCR STOP mode.
At this time, do not pull out the jack on the Viewcam side.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 33.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so that the frequency counter indicates 4.2 MHz on TL7401.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 33.

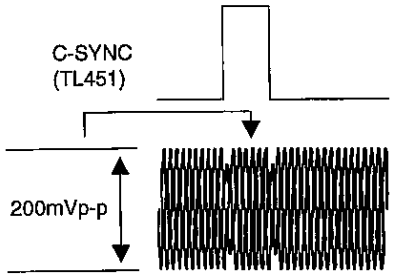
5. Adjustment of Y-FM deviation

Measuring instrument	Oscilloscope
Mode	REC/PB (self-playback/recording)
Input signal	Color bar
Measuring point	TL801
Adjustment address	34
Adjustment level	1.0 Vp-p ± 40 mVp-p

(1) Set the recordable tape.
(2) Before entering the adjustment mode, make self-playback/recording of color bar with an external output.
Measure whether the playback output at this time is 1.0 Vp-p on TL801.
(3) Enter the VCR adjustment mode with an adjustment remote control, and select the address 34.
Select the address, using the FF or REW key, and fix it with the PB key.
(4) When decreasing by 10 mVp-p as compared to the measurement value of (2), increase the data of address 34 by about 5 (digit). (Reference)
When increasing by 10 mVp-p as compared to the measurement value of (2), decrease the data of address 34 by about 5 (digit). (Reference)
Select the address, using the FF or REW key, and fix it with the PB key.
(5) Release the adjustment mode, and make self-playback/recording again. When the measuring value at this time is in the standard value, the adjustment is completed. If it is not in the standard value, repeat the steps (2) - (4).
(6) After completing the adjustment of (5), check the adjusting value of Y-FM carrier f0 (4.2 MHz in no input).
When the measuring value exceeds the standard value of carrier f0, make an adjustment of Y-FM carrier f0 again.

6. Adjustment of Y recording current

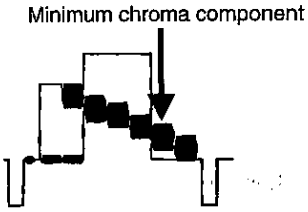
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL7401
Adjustment address	35
Adjustment level	200 ± 10 mVp-p



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 35.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so that the SYNC TIP portion gets 200 mVp-p on TL7401.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 35.

7. Adjustment of comb filter

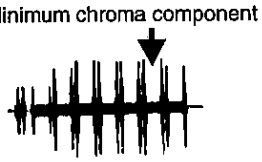
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL404
Adjustment address	Phase: 36, Gain: 37
Adjustment level	Minimum chroma component



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 36.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so as to minimize the chroma component on TL404.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 36.
(4) Enter the VCR adjustment mode with an adjustment remote control, and select the address 37.
Select the address, using the FF or REW key, and fix it with the PB key.
(5) Make an adjustment so as to minimize the chroma component on TL401.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 37.
(6) Repeat the steps (2) - (3).

8. Adjustment of chroma emphasis f0

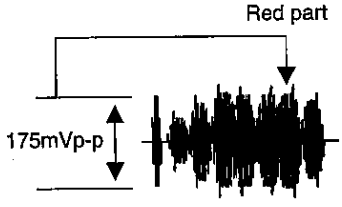
Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL7402
Adjustment address	38
Adjustment level	Minimum chroma component



(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 38.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so as to get minimum chroma component on TL7402.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 38.

9. Adjustment of C recording current

Measuring instrument	Oscilloscope
Mode	VCR STOP
Input signal	Color bar
Measuring point	TL7402
Adjustment address	39
Adjustment level	175 ± 10 mVp-p

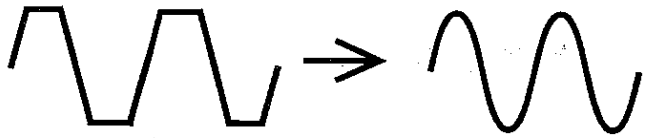


(1) Input the color bar signal into the video input/output terminal in the VCR STOP mode.
(2) Enter the VCR adjustment mode with an adjustment remote control, and select the address 39.
Select the address, using the FF or REW key, and fix it with the PB key.
(3) Make an adjustment so that the amplitude of red portion gets 175 mVp-p on TL7402.
Select the data, using the FF or REW key, and fix it with the PB key.
After the adjustment, press the STOP key, and exit from the adjustment address 39.

5-1-6. Adjustment of audio circuit

1. Adjustment of filter fo

Measuring instrument	Oscilloscope
Mode	PB
Input signal (tape)	JiGWR5-5CSP
Measuring terminal	TL605/AUDIO.OUT
Adjustment address	21
Adjustment value	Clear the waveform



1) Set the standard tape (JiGWR5-5CSP)
2) Using the adjustment remote controller (RRMCG0033TASA), set the VCR adjustment mode, and set the address "21" with the operation switch (FF/REWIND key).
3) Play back the standard tape.
4) Using the operation switch (FF/REWIND key), make an adjustment so that the most clear playback waveform is obtained on TL605.
5) Press the operation switch (PLAYBACK key) to write the data.
6) Press the operation switch (STOP key) to exit from the address "21". (The address "21" blinks.)

Audio Check
Checking of self-recording/playback

Measuring instrument	Valve voltmeter (oscilloscope)
Mode	REC → PB
Input signal (tape)	400 Hz, -8 dBs (872 mVp-p)
Measuring terminal	Audio IN/OUT
Adjustment address	—
Adjustment value	-8 dBs ± 4 dBs (580 to 1370 mVp-p)

1) Input the audio signal (400Hz, -8dBs) into the Audio line IN/OUT terminal, and record.
2) Connect the valve voltmeter (oscilloscope) to the Audio line IN/OUT terminal.
3) Play back the record, and ascertain that the output waveform level is -8 dBs ± 4 dB (580 to 1370 mVp-p on the oscilloscope).
4) If there is any deviation from the specified value, perform adjustment again as stated in items 1) above, and check again the self-recording/playback level.

5-1-7. Description of O.S.D. Jig Operation

RUNTK0309TAZZ is an adjusting character output jig for a VL-E66S/H,VL-E78E system. Figure 1 shows a view of the jig. Jig operating instructions are given below.

RUNTK0309TAZZ superimposes text data from a VL-E66S/H,VL-E78E system on video signals input to the jig and displays the mix on a TV monitor. Thus any text data can be mixed with video data as long as the latter is compatible with the relevant TV system. There is no relationship whatsoever between the VL-E66S/H,VL-E78E system and the video signals used for adjustment.

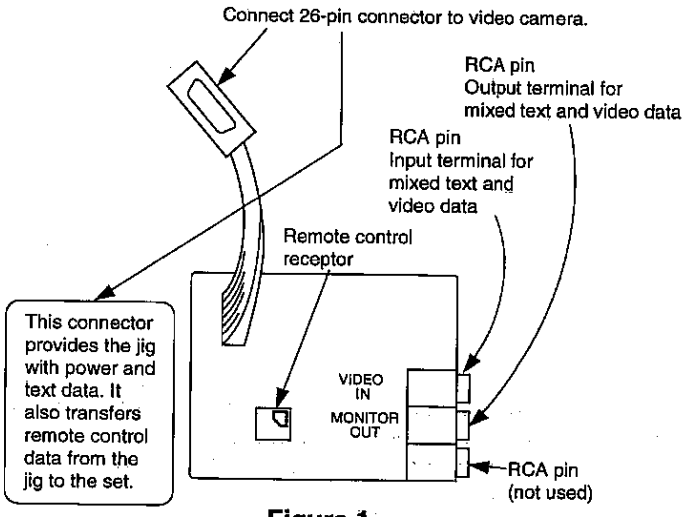


Figure 1

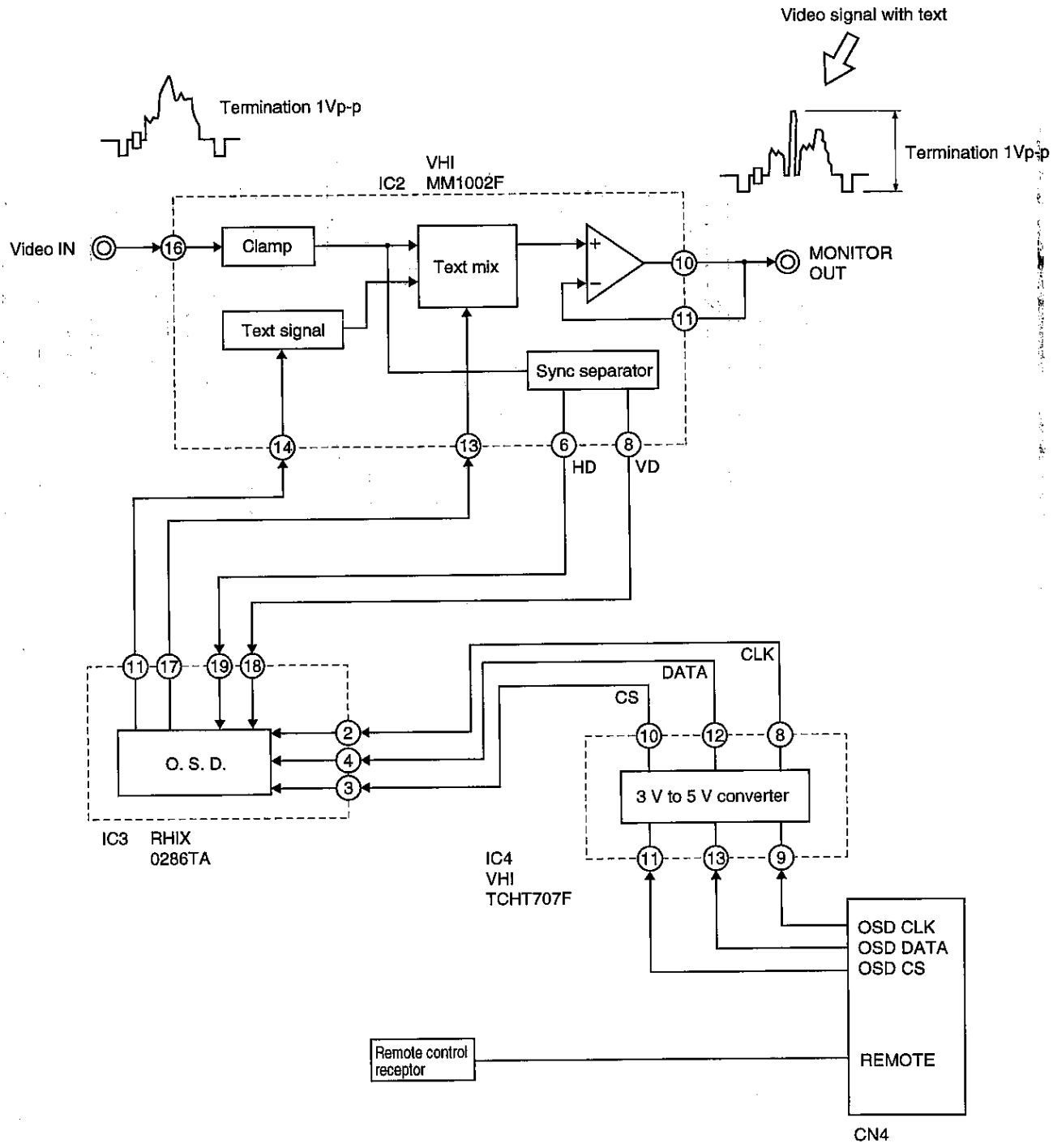
1. Insert the 26-pin connector from RUNTK0309TAZZ connector in the VL-E66S/H,VL-E78E system camera (The connector is inside the camera front cabinet.)
   The 26-pin cable provides the jig with power and text data, and part of the adjusting signals can be observed. Since the jig has a remote control receptor, the remote control signal is transferred to VL-E66S/H,VL-E78E system via the 26-pin cable.

2. Video cameras and other signal generating devices shall be connected to VIDEO IN on the RUNTK0309TAZZ.

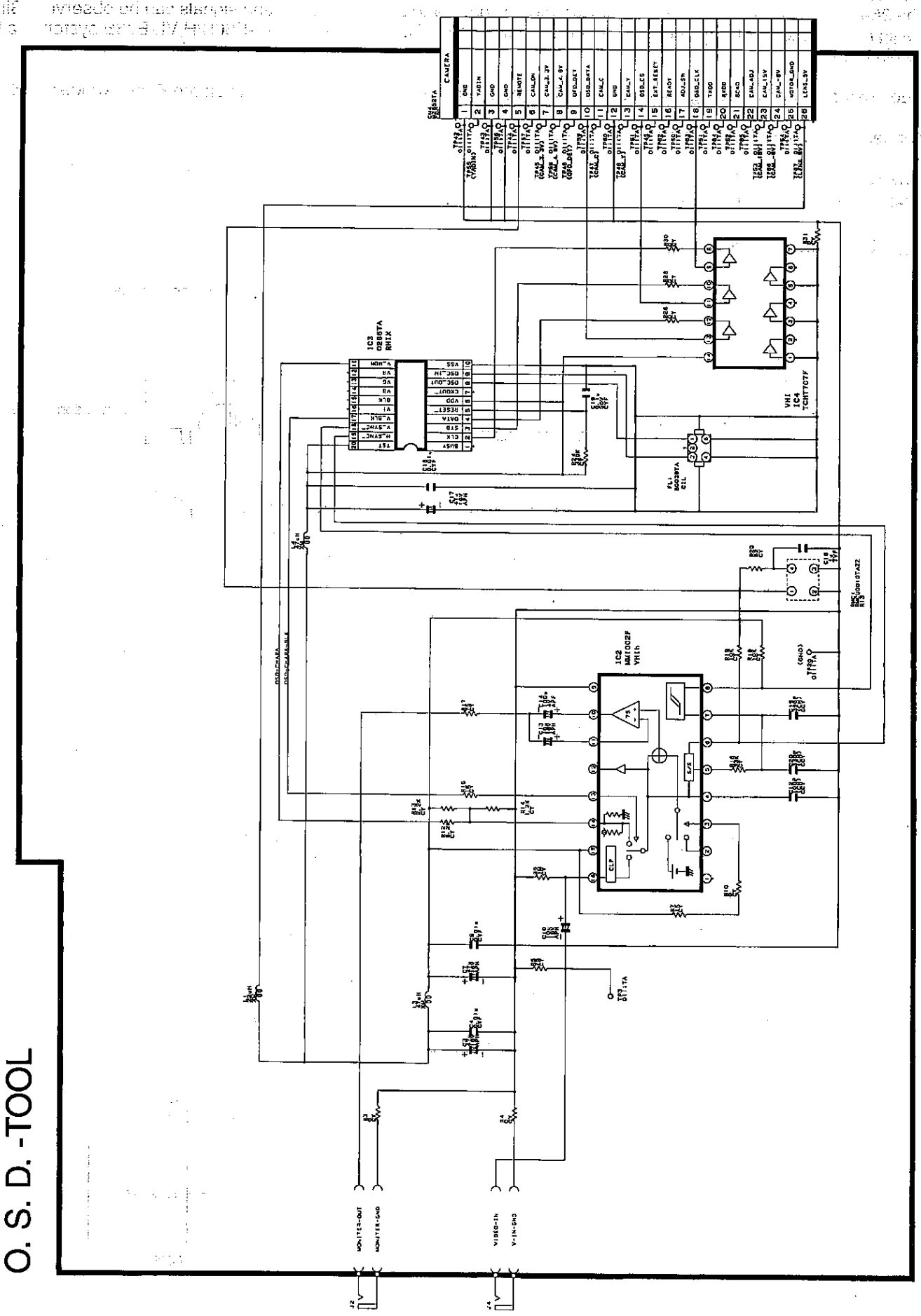
3. Connect MONITOR OUT on RUNTK0309TAZZ to the video input on a TV monitor.

* When steps 1 to 3 are completed, images from the signal generator is mixed with the text data from the VL-E66S/H,VL-E78E system and can be viewed on a TV monitor.

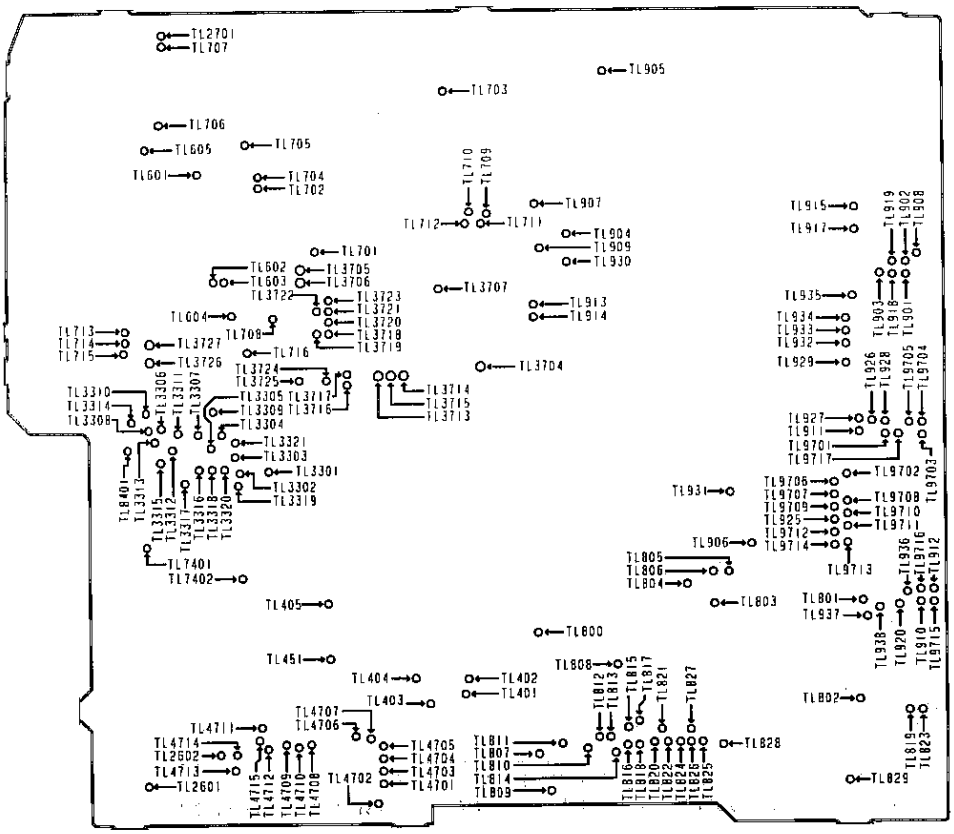
Block diagram of O.S.D. jig



ON SCREEN-DISPLAY TOOL FOR ADJUSTMENT

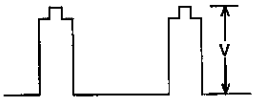


5-1-8. Adjustment of LCD display circuit

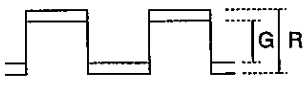


Adjustment procedures and connections are the same as with the VCR section.

1. Contrast adjustment

Measuring point	TL817 (G-OUT)
Address	40
Mode	VCR AV input
Adjusting method	1) Set the data of address 47 at the address 80. 2) Input white 100% as an AV input. 3) Connect TL805 to GND. (The 1H inversion stops.) 4) Connect 220 KΩ between TL803 and GND. 5) Seeing the waveform of TL817 (G-OUT), make an adjustment between the white peak and the sync tip. 
Adjustment standard	3.3V ± 0.1V
Remarks	————

2. R-W/B adjustment

Measuring point	TL817 (G-OUT) TL816 (R-OUT)
Address	41
Mode	VCR AV input
Adjusting method	1) AV input: Nonsignal. 2) TL817 (G-OUT): Oscilloscope CH1 TL816 (R-OUT): Oscilloscope CH2 3) Adjust P-P of TL816 becomes bigger 0.15V than TL817. 
Adjustment standard	± 0.1Vp-p
Remarks	————

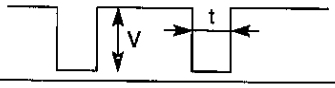
3. B-W/B adjustment

Measuring point	TL817 (G-OUT) TL818(B-OUT)
Address	42
Mode	VCR AV input
Adjusting method	1) AV input: Nonsignal. 2) TL817 (G-OUT): Oscilloscope CH1 3) TL818 (B-OUT): Oscilloscope CH2 4) Adjust P-P of TL818 become bigger 0.1V than TL817.
Adjustment standard	±0.1Vp-p
Remarks	————

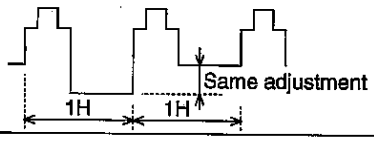
4. VCO adjustment

Measuring point	TL808
Address	43
Mode	VCR AV input
Adjusting method	1) AV input : NON Signal 2) Connect the frequency counter to TL808, and adjust the frequency.
Adjustment standard	15.625kHz ± 100Hz
Remarks	————

5. H-position adjustment

Measuring point	TL808
Address	44
Mode	VCR AV input
Adjusting method	1) Input the white 100% signal as an AV input. 2) Connect the oscilloscope to TL808, and adjust the pulse width. 
Adjustment standard	Type 3 3.7µsec ± 0.15µsec
Remarks	————

6. Burst phase adjustment

Measuring point	TL818
Address	49
Mode	VCR AV input
Adjusting method	1) Input the monochrome signal (R) to the AV input. 2) Connect TL805 to GND. (1H inversion stop) 3) Set the data of address 48 to 30. 4) Minimize the signal level difference every 1H. 
Adjustment standard	±400mV
Remarks	————

7. COMMON PULSE adjustment

Measuring point	TL821
Address	22
Mode	VCR AV input
Adjusting method	1) Set the data of address 47 at the address 80. 2) Input the white 100% signal as an AV input. 3) Connect the oscilloscope to TL821, and adjust the pulse width.
Adjustment standard	7.2Vp-p ± 0.1Vp-p
Remarks	————

8. COM-BIAS adjustment

Measuring point	LCD panel display surface
Address	45
Mode	VCR AV input
Adjusting method	1) Input the white 40% signal as an AV input, and set data of address 47 at the address 80. 2) Set the illuminometer (TOPCON IM-3) on the LCD panel surface (do not allow entry of external light). 3) Connect the illuminometer to the oscilloscope. 4) Make an adjustment so as to minimize the ripple of output waveform. Response time: 0.6 sec 5) Adjust again if longitudinal stripe appears evidently. * Or set to the point where the black is settled deepest with the grey scale signal.
Adjustment standard	Minimum
Remarks	Make an adjustment after aging for 5 minutes or more.

9. W/B adjustment

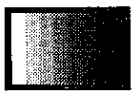
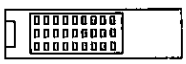
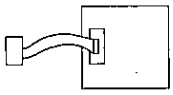
Measuring point	LCD panel display surface
Address	41, 42
Mode	VCR AV input
Adjusting method	1) White fade signal input. 2) Adjust so as to get the same white screen as that of standard monitor. (Adjust again, visually checking as stated in item 2.3.)
Adjustment standard	Standard monitor
Remarks	Make an adjustment after aging for 5 minutes or more.

5-2. ADJUSTMENT OF CAMERA SECTION

5-2-1. Servicing of camera section

(1) Object, measuring instrument and jigs necessary for camera section servicing

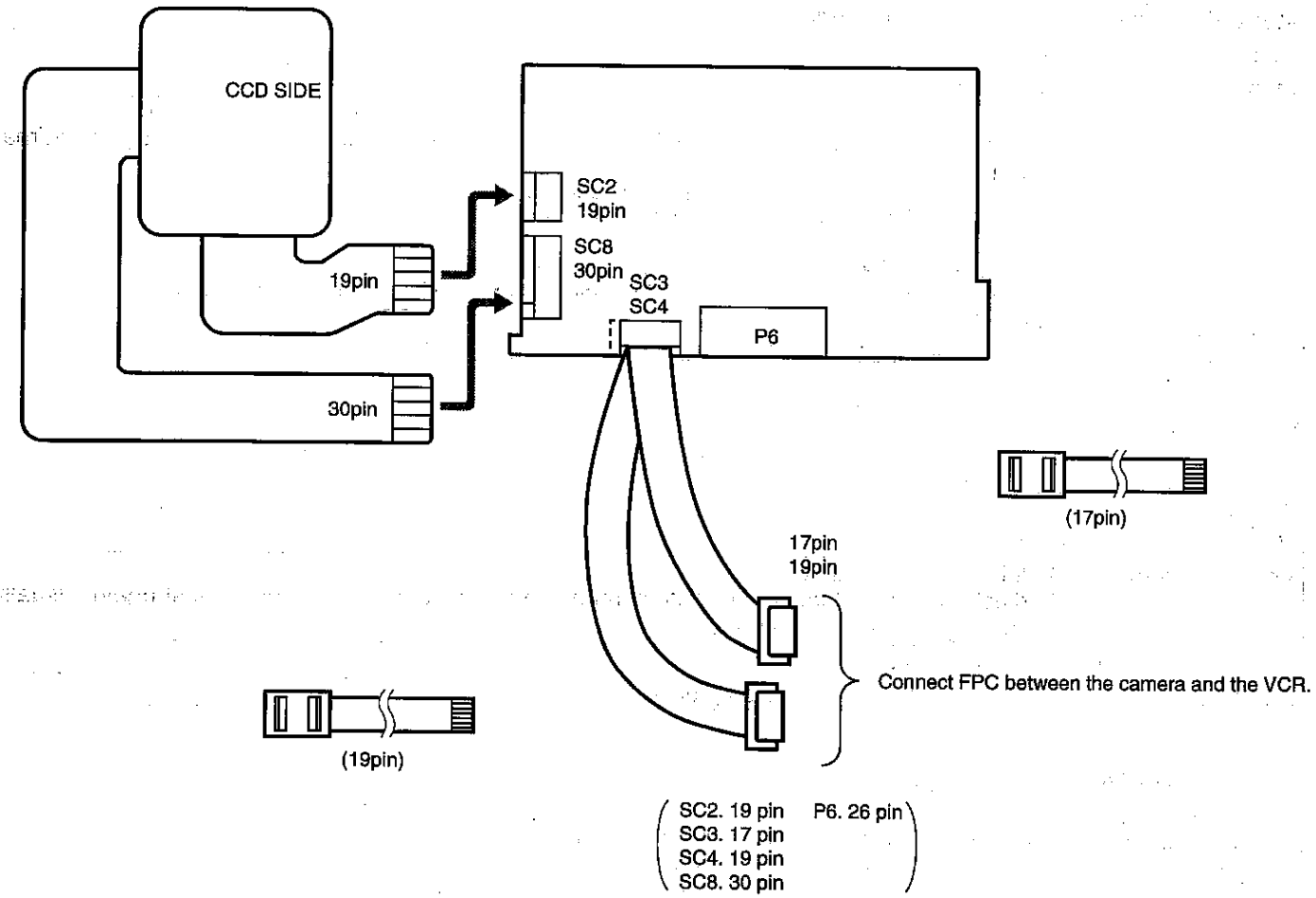
- Gray scale chart
- Color bar chart
- AC adapter
- Vectorscope
- Color temperature conversion filter HOYA "LB-165"
- Extension cable
- Digital voltmeter
- OSD Jig
- Oscilloscope
- Halogen light(2 pcs.)
- Service Remoto Control
- Video output cable
- Color video monitor

NO.	Item	Part Cord	Price Code	Configuration	Note
1	Gray Scale Chart (390 x 520 mm)	JiGCHART-1	CP		
2	Color Bar Chart (240 x 320 mm)	JiGCHART-4	* *		
3	Color Temperature Conversion Filter	JiGHOYA-LB165	BH		
4	Service Remote Control	RRMCG0033TASA	BT		
5	OSD Jig	RUNTK0309TAZZ	CB		

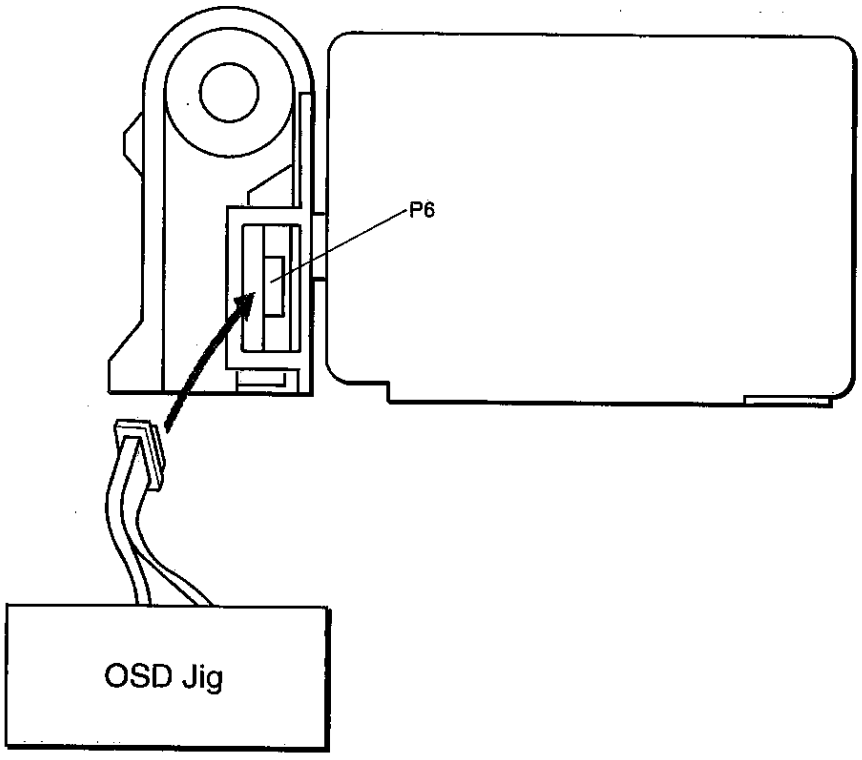
Note:

1. Color temperature conversion filter (jig item No.3) may be obtained from HOYA Optics in your local market.
2. N: Indicates the new jigs.

• **Connections for Camera Section Servicing**

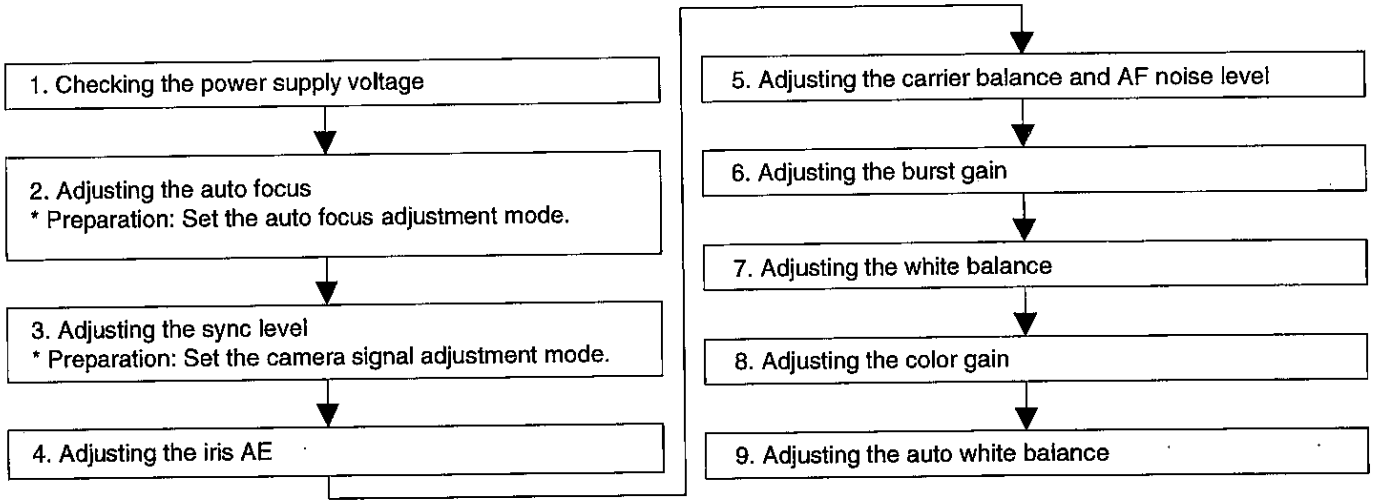


• **Connections for Camera Section Adjustment**



5-2-2. Adjustment procedures

This adjusting procedure covers all the steps for conducting the adjustments all the way. There are some steps that may be skipped, depending on the specific needs for servicing and adjustment.

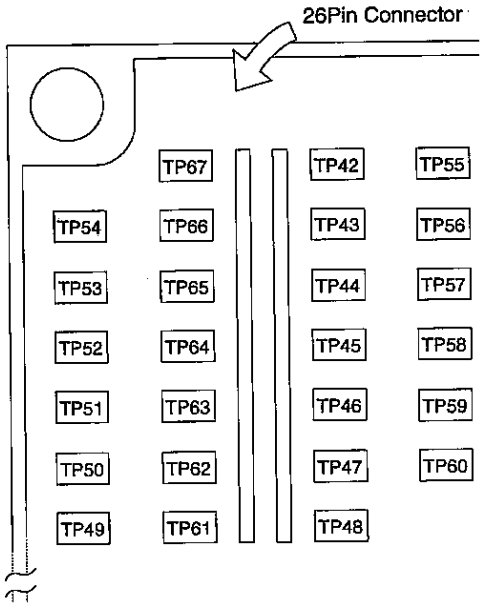

1. Checking the power supply voltage
2. Adjusting the auto focus
* Preparation: Set the auto focus adjustment mode.
3. Adjusting the sync level
* Preparation: Set the camera signal adjustment mode.
4. Adjusting the iris AE
5. Adjusting the carrier balance and AF noise level
6. Adjusting the burst gain
7. Adjusting the white balance
8. Adjusting the color gain
9. Adjusting the auto white balance

5-2-3. Setting the adjustment modes

Take the same steps as for the VCR adjustments.
NOTE: Never change any other address data than those to be adjusted.

5-2-4. Adjusting the camera section

Location fo test points use the OSD Jig.



5-2-4-1. Checking the power supply voltage

- Measuring terminal: CAM 4.9V
  CAM 2.9V
  CAM 15V
  CAM -8V
  LENS 5V
- Measuring instrument: Digital voltmeter

- Mount the OSD tool on the P6 connector of camera main PWB, and check the following voltages.

CAM 4.9V	4.9V±0.1V
CAM 2.9V	2.9V±0.1V
CAM 15V	15V±0.1V
-8V	-8V±1V
LENS 5V	4.9V±0.2V

5-2-4-2. Auto focus adjustment

Before starting this adjustment, set up the auto focus adjustment mode.

• Basic iris adjustment

Measuring instrument	None
Subject	—
Tape	—
Test point	None
Adjustment address	1FF
Adjustment level	09, 0A, 0B

1) Set up the auto focus adjustment mode.
2) Write the adjustment data 09, 0A and 0B one after the other to the address 1FF, the adjustment are as follows.

Data	Adjustment
09	Hall offset
0A	Iris offset
0B	Iris close

• Lens adjustment

Measuring instrument	None
Subject	More than 50 m away
Tape	—
Test point	None
Adjustment address	1FF
Adjustment level	0C, 06, 08

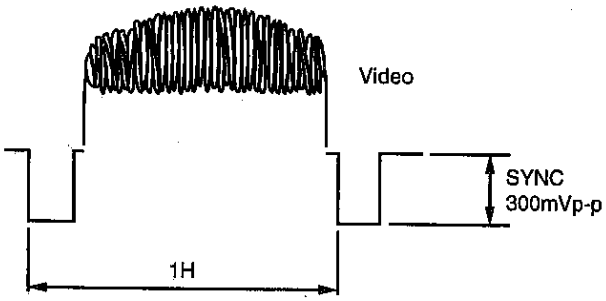
1) Set up the auto focus adjustment mode.
(This is unnecessary after the above basic iris adjustment has been made.)
2) Write the adjustment data 0C, 06 and 08 one after the other to the address 1FF. The adjustments are as follows.

Data	Adjustment
0C	MR sensor
06	WIDE END ∞ position
08	TELE END ∞ position

5-2-4-3.

• Sync level adjustment

Measuring instrument	Oscilloscope
Subject	Anything
Tape	—
Test point	CAM-Y
Adjustment address	1F8
Adjustment level	300 mVp-p

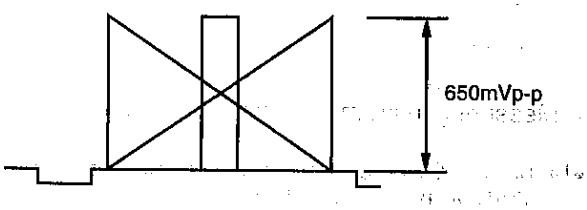


1) Get the camera ready to shoot.
2) Connect the oscilloscope to the CAM-Y test point on the adjustment Circuit Board. Adjust the sync level to 300 mVp-p.

5-2-4-4.

• Iris AE adjustment

Measuring instrument	Oscilloscope
Subject	Gray scale
Tape	—
Test point	YADIN
Adjustment address	1FD
Adjustment level	650mVp-p



1) Set up the camera signal line adjustment mode.
2) Shoot the gray scale in the standard way. Observe the YADIN signal on the oscilloscope screen and rewrite the data of address 1FD to get an amplitude of 650 mVp-p as shown below.

5-2-4-5.

• Carrier balance , AF noise level adjustment

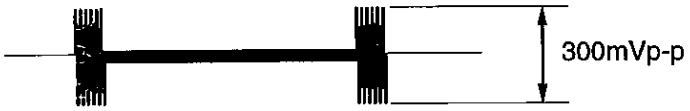
Measuring instrument	None
Subject	Anything
Tape	—
Test point	None
Adjustment address	1FF
Adjustment level	01

1) Preparation : write FF to address 19C, 19D, 19E, 19F, 1A0, 1A1.
2) Write the data 01 to the address 1FF.
   The following adjustments are automatically carried on ; ① Carrier balance
   ② AF noise level
   at AGC Gain Min , Middle and Max.
3) Data processing after adjusting the noise level
   Calculation formula (Round off fractions.)

5-2-4-6.

• Burst gain adjustment

Measuring instrument	Oscilloscope
Subject	None
Tape	—
Test point	CAM-C
Adjustment address	1F9
Adjustment level	300 mVp-p

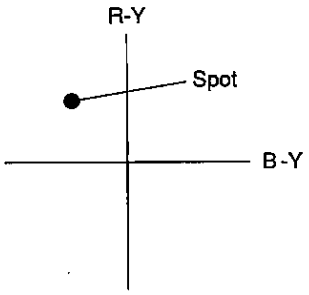


1) Measure the burst signal level on the oscilloscope. Using the address 1F9, adjust the burst amplitude to 300 mVp-p.

5-2-4-7.

• White balance adjustment

Measuring instrument	Vector scope
Subject	Gray scale
Tape	—
Test point	VIDEO OUT
Adjustment address	R-GAIN 010, B-GAIN 012
Adjustment level	R-Gain 15 % ± 3 % B-Gain –15 % ± 3 %

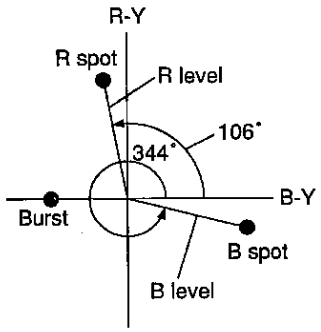


1) Adjust the spot to the point (R-Y : 15%, B-Y : –15% ratio to burst) using address 010 and 012.

5-2-4-8.

• Color gain adjustment

Measuring instrument	Vector scope
Subject	Color bar chart
Tape	—
Test point	VIDEO OUT
Adjustment address	R-Y GAIN 0DD B-Y GAIN 0DB R-Y MAT 0D7 B-Y MAT 0D9
Adjustment level	R-Y GAIN; Burst ratio 1.4 ± 0.1 B-Y GAIN; Burst ratio 1.0 ± 0.1 B-Y MAT; 106 ± 2° R-Y MAT; 344 ± 2°

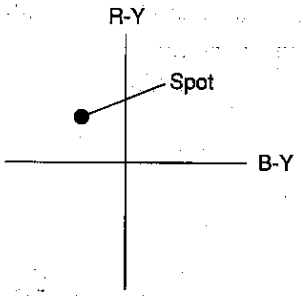


1) Using the address 0DD, adjust the R level to a burst ratio of 1.4. With the address 0DB, adjust the B level to a burst ratio of 1.0.
2) Using the address 0D7, adjust the R phase to 106°. With the address 0D9, adjust the B phase to 344°.
3) Repeat the above steps 1) and 2).

5-2-4-9.

• Auto white balance adjustment

Measuring instrument	Vector scope
Subject	Gray scale
Tape	—
Test point	VIDEO OUT
Adjustment address	R-OUT DOOR 016 B-OUT DOOR 018
Adjustment level	R-OUT DOOR; 15 ± 3 % B-OUT DOOR; –15 ± 3 %



1) Attach the color temperature conversion filter (JIGHOYA-LB165) to the front of the lens.
2) Using the addresses R-OUT DOOR 016 and B-OUT DOOR 018, adjust the spot to the point (R-Y : 15%, B-Y : –15% ratio to burst).
3) Take off the color temperature conversion filter.
4) Restore the initial data "0000" written in the address "1FE", and write "00FF" here.

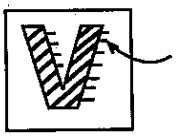
↓

OK

5-3. TROUBLE SHOOTING

5-3-1. Classification of troubles

No function at all	YES	Check the Power circuit and system control circuit.
No tape ejection	YES	Check the system control and loading motor circuit.
No LCD light-up	YES	Check the inverter transformer and power circuit.
No picture in EE mode	YES	* Check the camera section and Y/C circuit and LCD circuit.
No picture playback	YES	Check the Y/C circuit and head amplifier circuit.
No video recording	YES	Check the Y/C circuit and head amplifier circuit.
Streaking at self-recording/playback	YES	Check the Y/C circuit and head amplifier circuit.



Noises at regular intervals in playback	YES	Check the ATF circuit.
No recorded characters on screen	YES	Check the LCD circuit and character generator (IC705).
No color in EE mode	YES	* Check the camera section and Y/C circuit.
No color in playback	YES	Check the Y/C circuit and head amplifier circuit.
No color in recording	YES	Check the Y/C circuit and head amplifier circuit.
No sound	YES	Check the audio circuit.
Error message (e.g. E007)	YES	Check the system controller and CAP MOTOR DRIVER circuit.

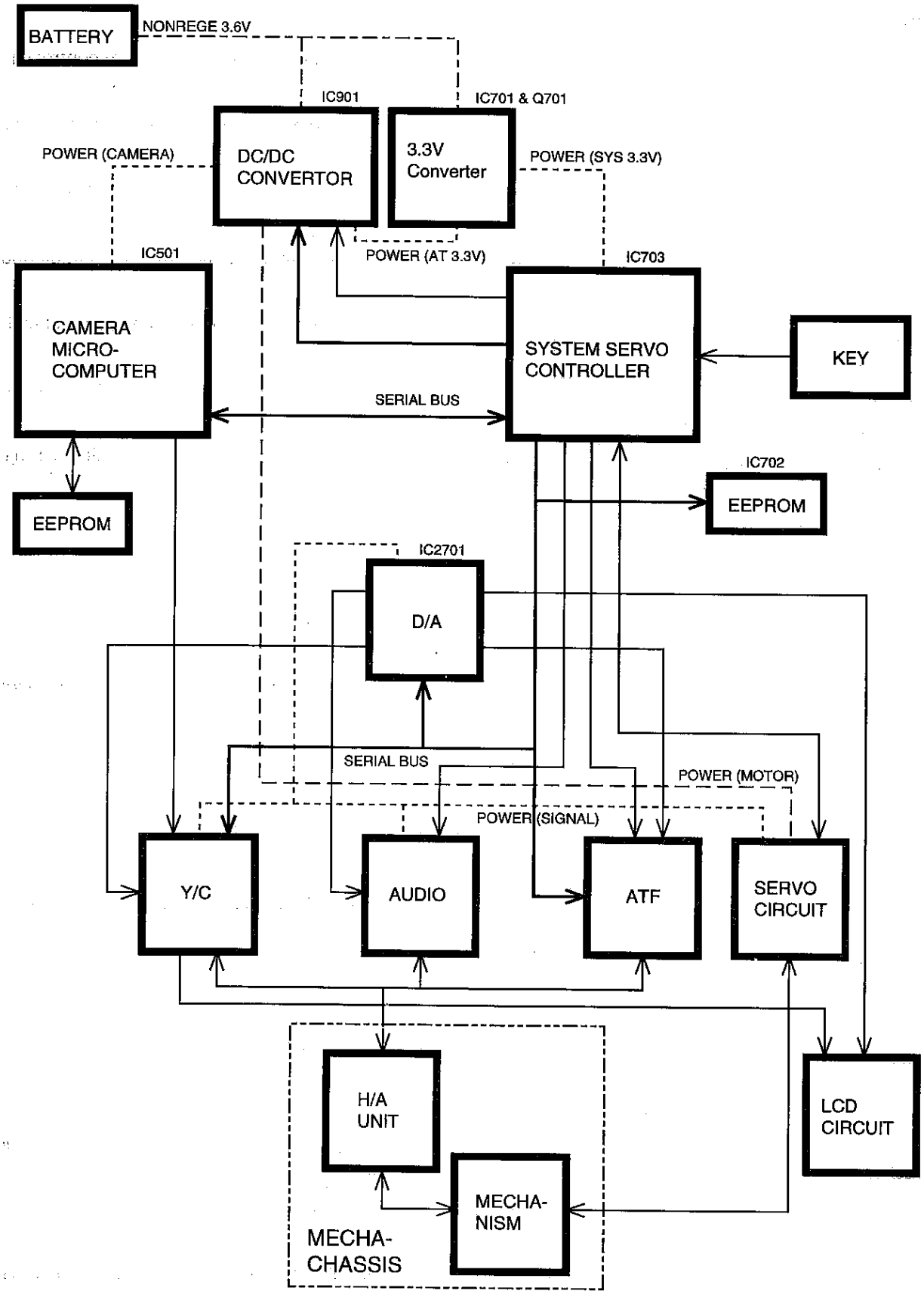
Normal

5-3-2. Troubleshooting for the camera section

No picture	YES	Check the lens drive circuit (IC551) and main signal line.
No color	YES	Check IC201 (DSP), and their peripherals.
No auto white balance function	YES	Check IC501 (camera CPU) and its peripherals.
No auto focus function	YES	Check IC501, IC551 and their peripherals.
No power zoom function	YES	Check IC501, IC551 and their peripherals.

Normal

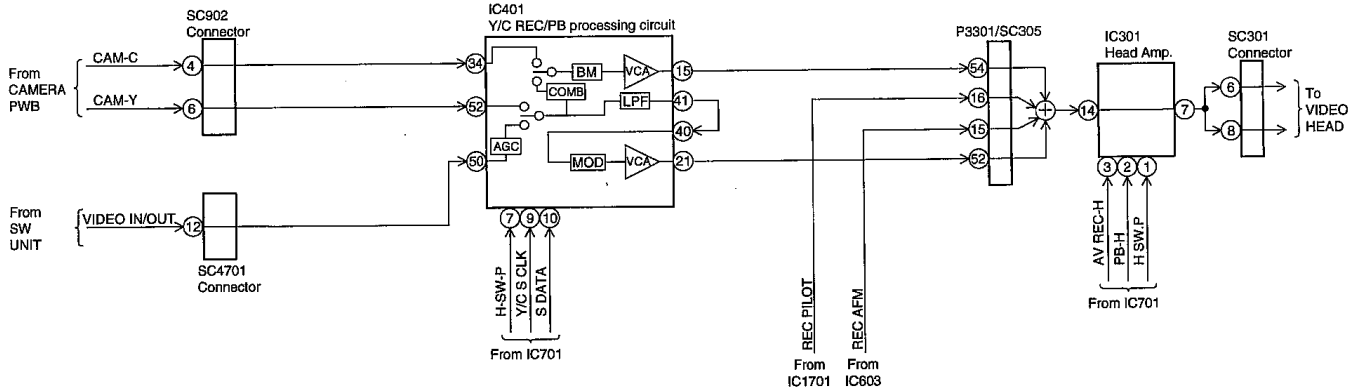
6. SYSTEM BLOCK DIAGRAM



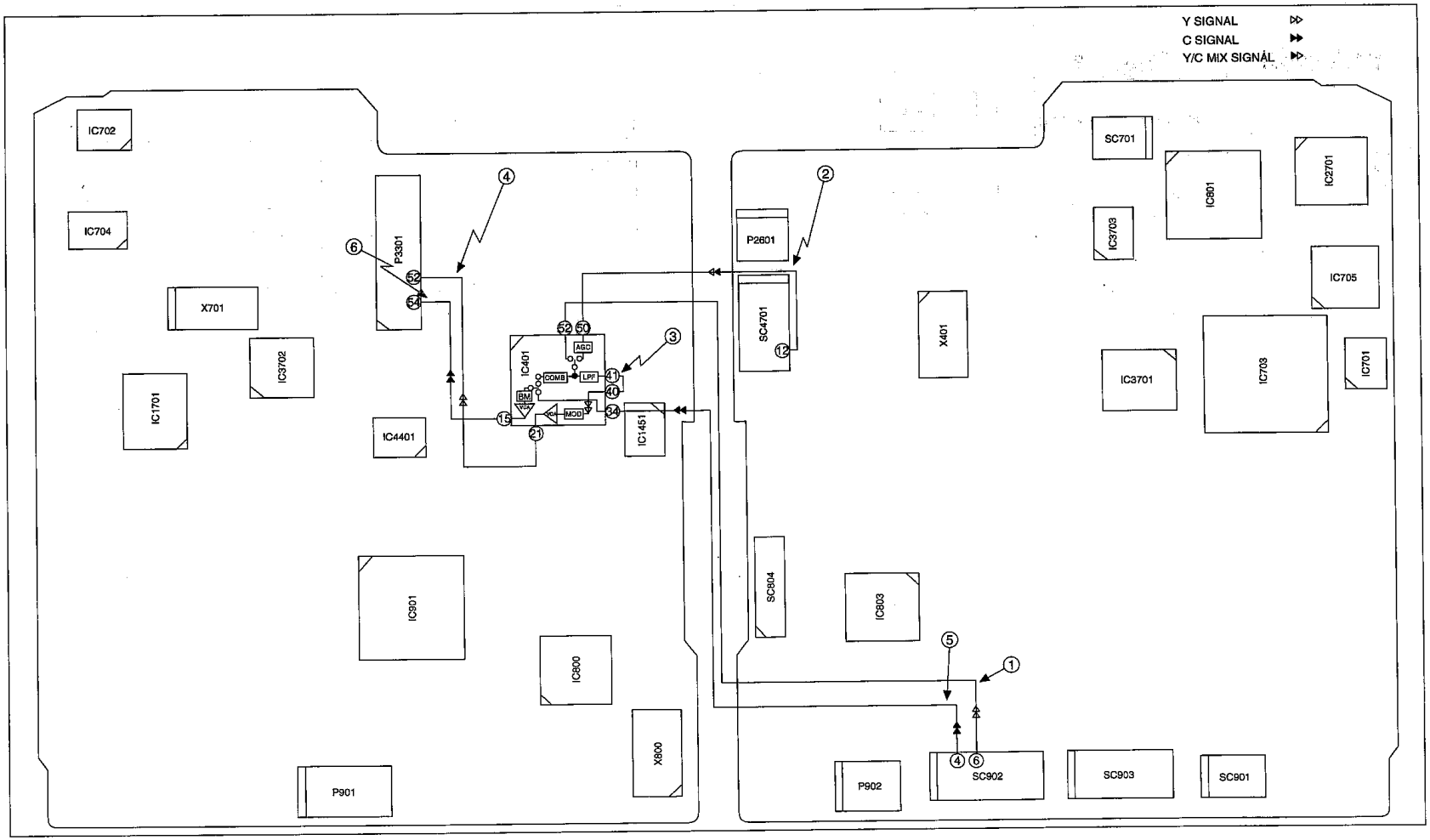
* On this model, all the circuits of the VCR and camera sections are controlled by IC701 and IC501.
  1) IC501 and IC401 are controlled with the serial data from IC701.
  2) IC303, IC702 is a memory that serves to store the adjustment data of the VCR section.
  3) IC502 is a memory that serves to store the adjustment data of the camera section.
  4) The other circuits and ICs are under the L/H level or the PWM control.

VL-E66S/H
VL-E78E

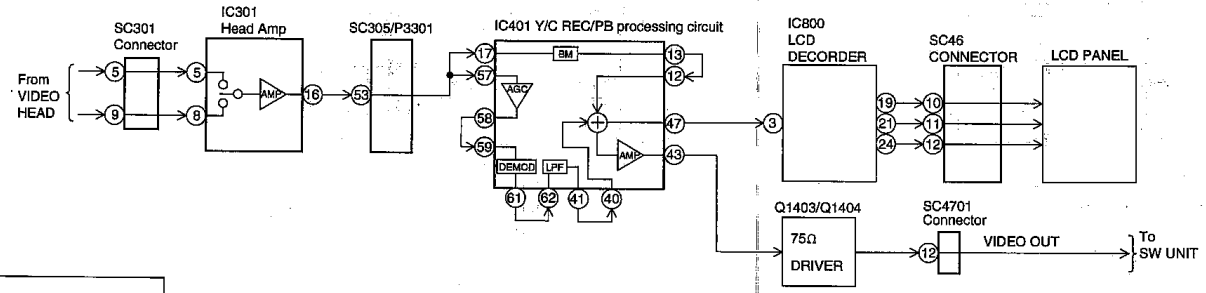
6-1. VCR SECTION BLOCK DIAGRAM Y/C recording signal flow



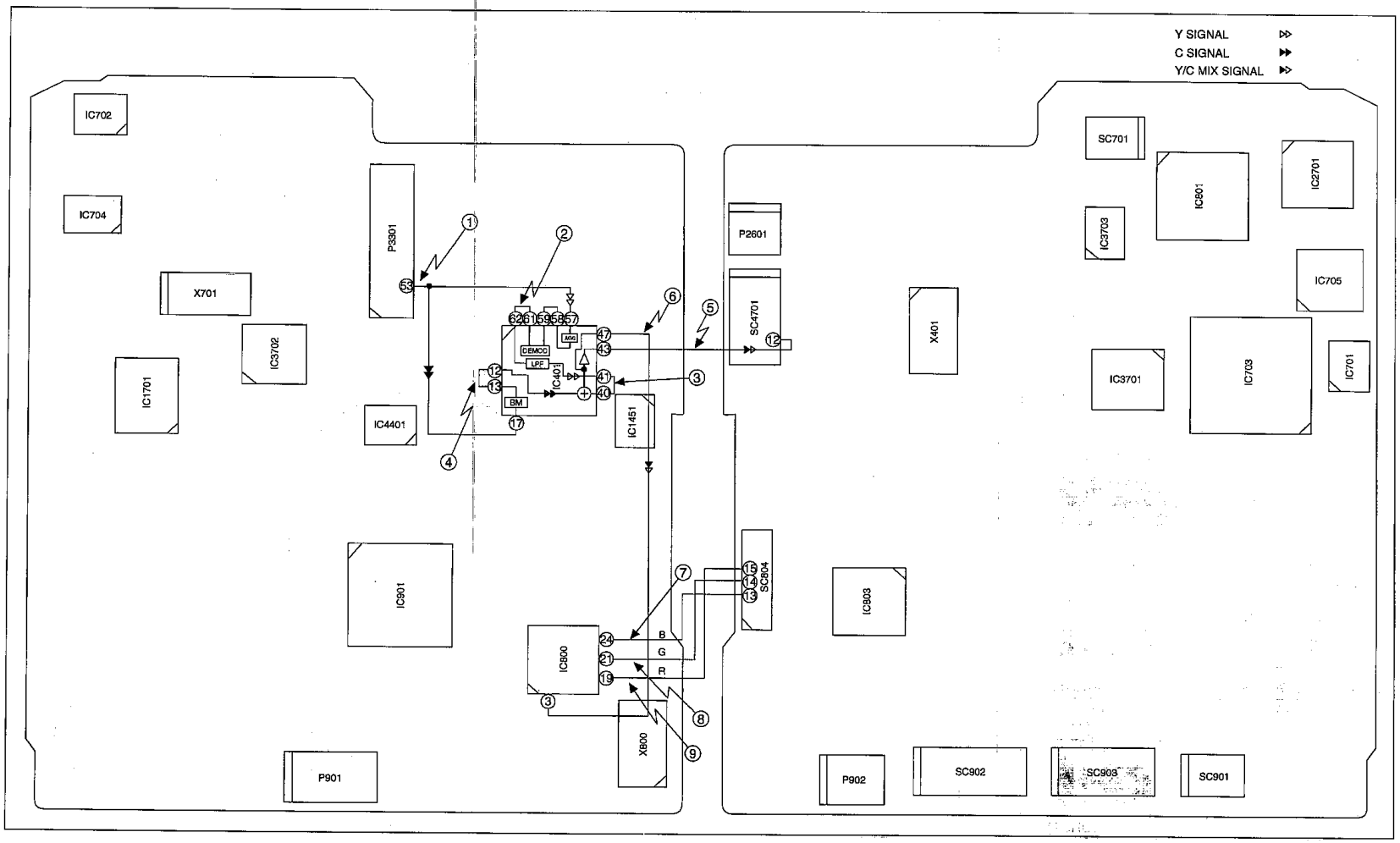
Signal waveform	Signal waveform
① (IC401 ㊷ Pin)	④ (IC401 ㉑ Pin)
1.0Vp-p (SYNC Tip~100% White Peak)	200mVp-p
② (IC401 ㊿ Pin)	⑤ (IC401 ㉞ Pin)
500mVp-p (SYNC Tip~100% White Peak)	286mp-p (BURST)
③ (IC401 ㊶ Pin)	⑥ (IC401 ⑮ Pin)
500mVp-p (SYNC Tip~100% White Peak)	175mVp-p (BURST)



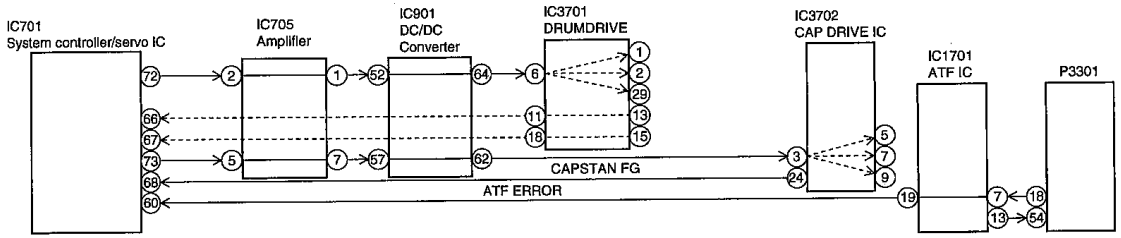
6-2. VCR SECTION BLOCK DIAGRAM Y/C playback signal flow

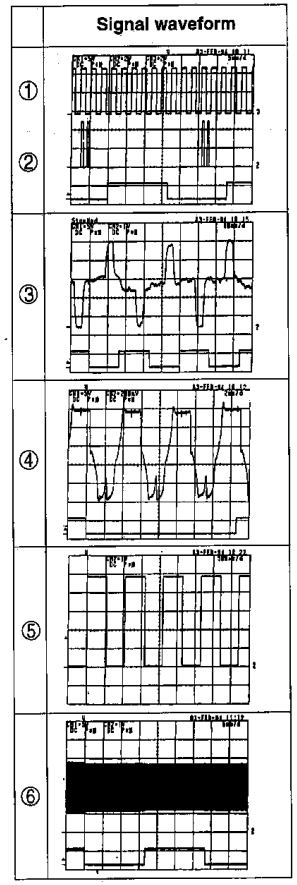


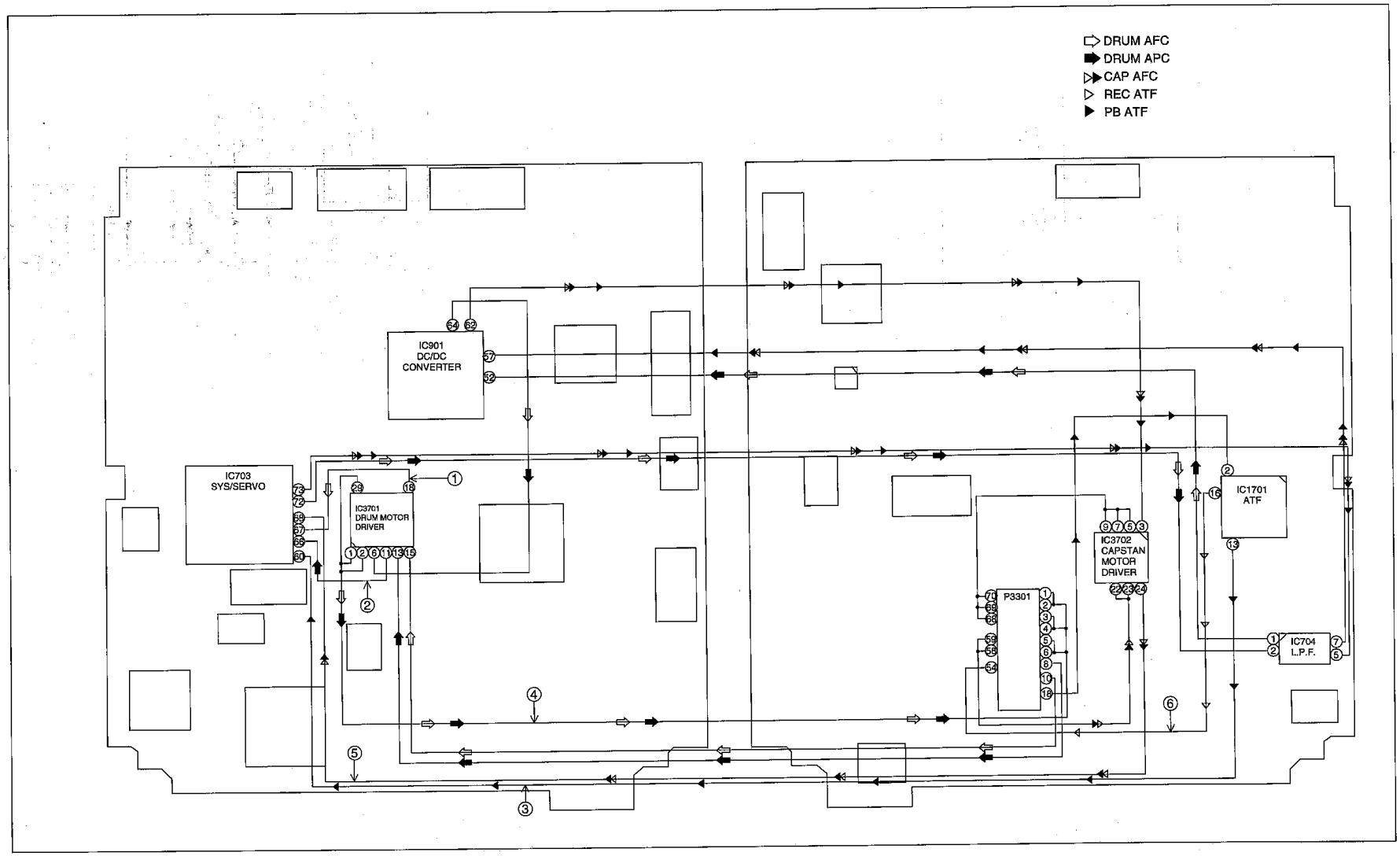
Signal waveform	Signal waveform
① (P3301 ⑤③Pin)	⑥ (IC401 ⑰Pin) 1.0Vp-p (SYNC Tip~100% white peak)
② (IC401 ⑫Pin)	⑦ (IC800 ㉔Pin) 3.6Vp-p
③ (IC401 ⑩Pin)	⑧ (IC800 ㉑Pin) 3.6Vp-p
④ (IC401 ⑬Pin)	⑨ (IC800 ⑲Pin) 3.6Vp-p
⑤ (IC401 ⑭Pin) 2.0Vp-p (SYNC Tip~100% white peak)	



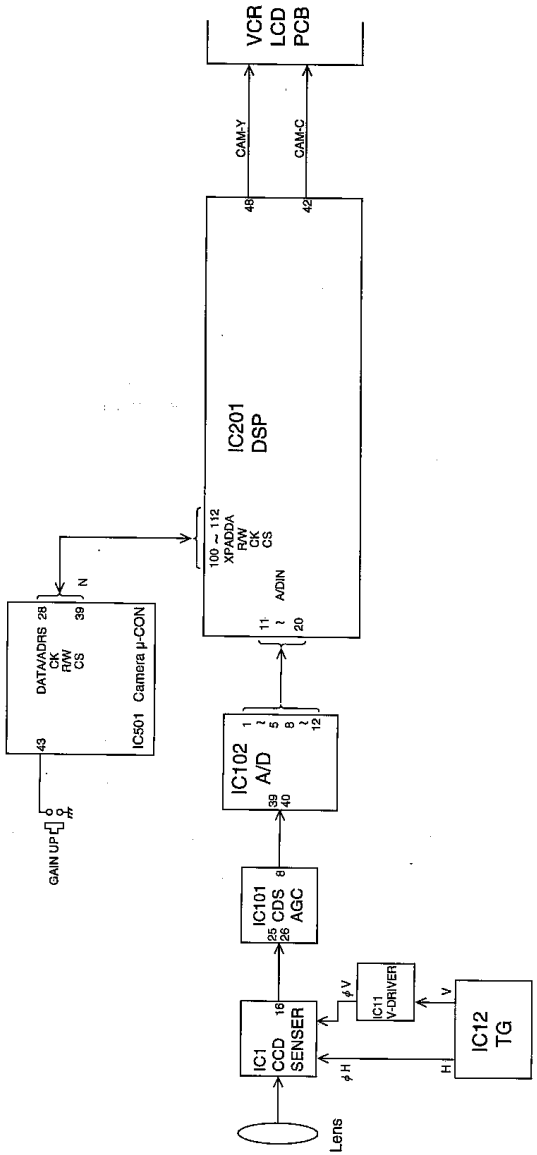
6-3. VCR SECTION BLOCK DIAGRAM Drum/capstan servo system signal flow





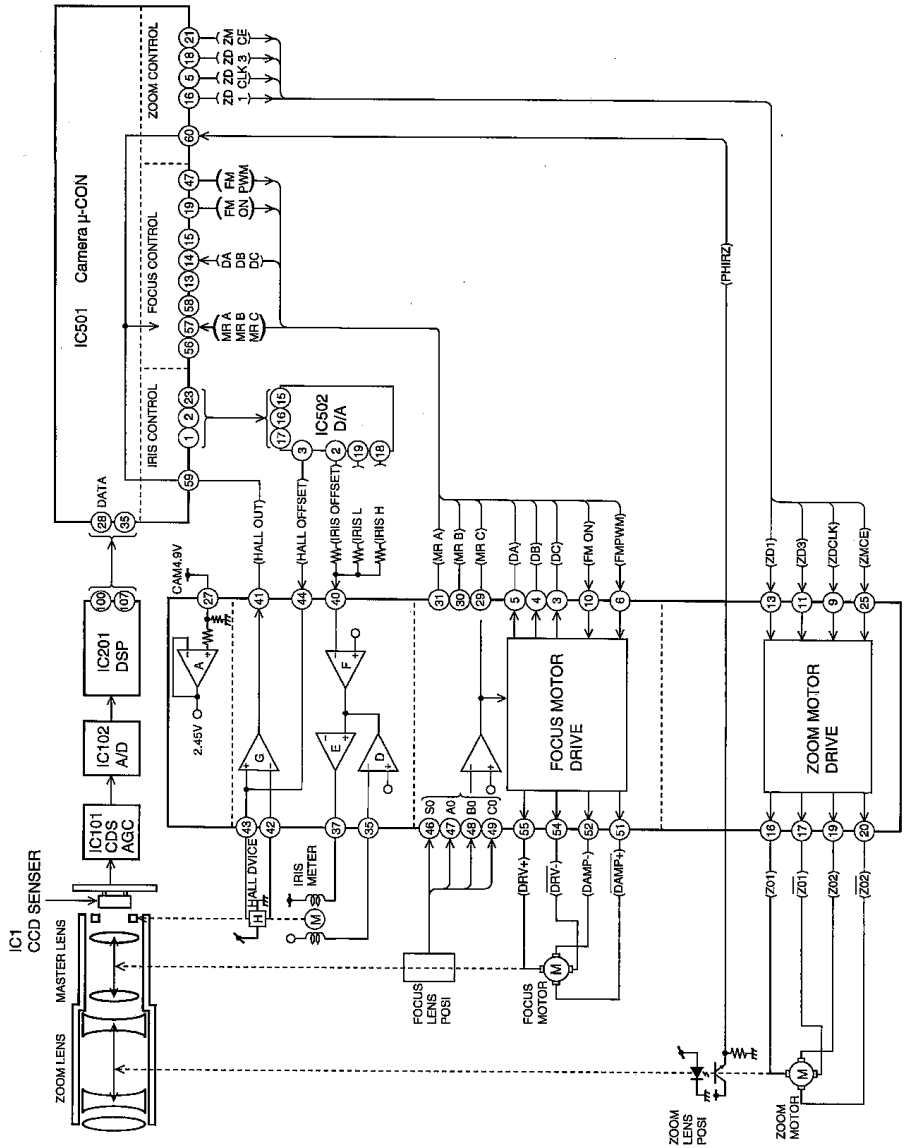


6-4. CAMERA SECTION BLOCK DIAGRAM



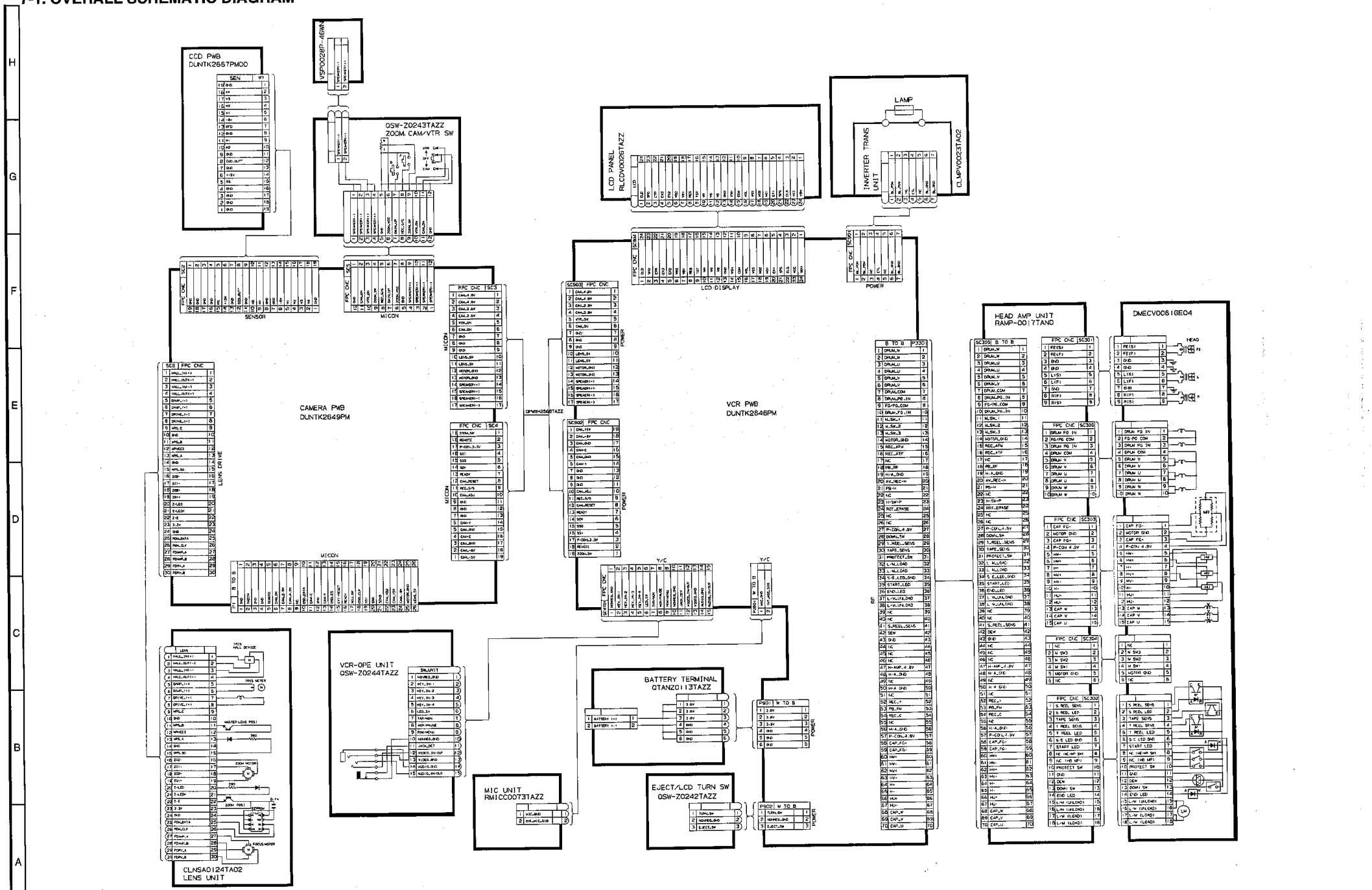
VL-E66S/H
VB-E78E

6-5. LENS DRIVE BLOCK DIAGRAM



7. SCHEMATIC DIAGRAMS

7-1. OVERALL SCHEMATIC DIAGRAM



7-1

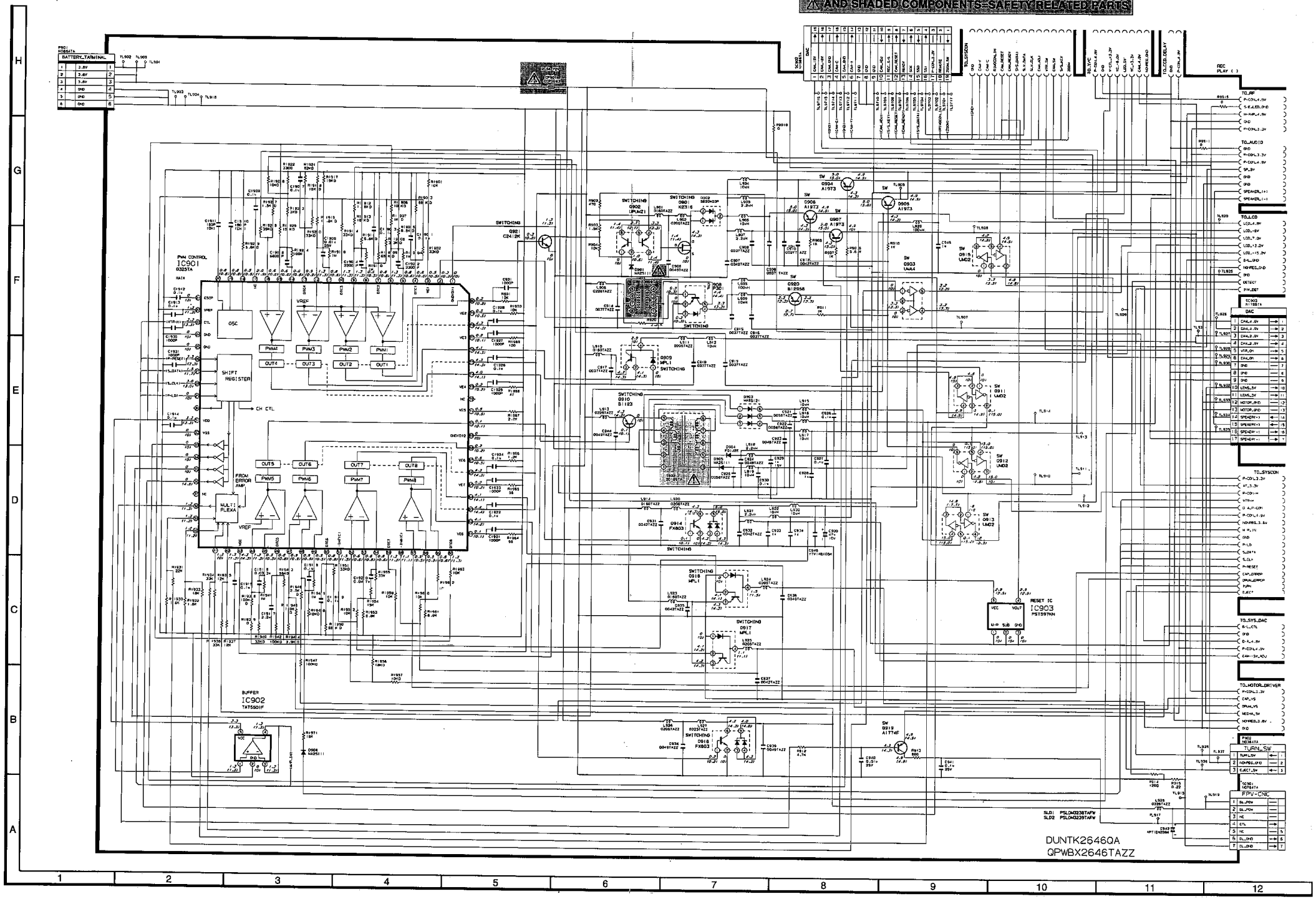
7-2

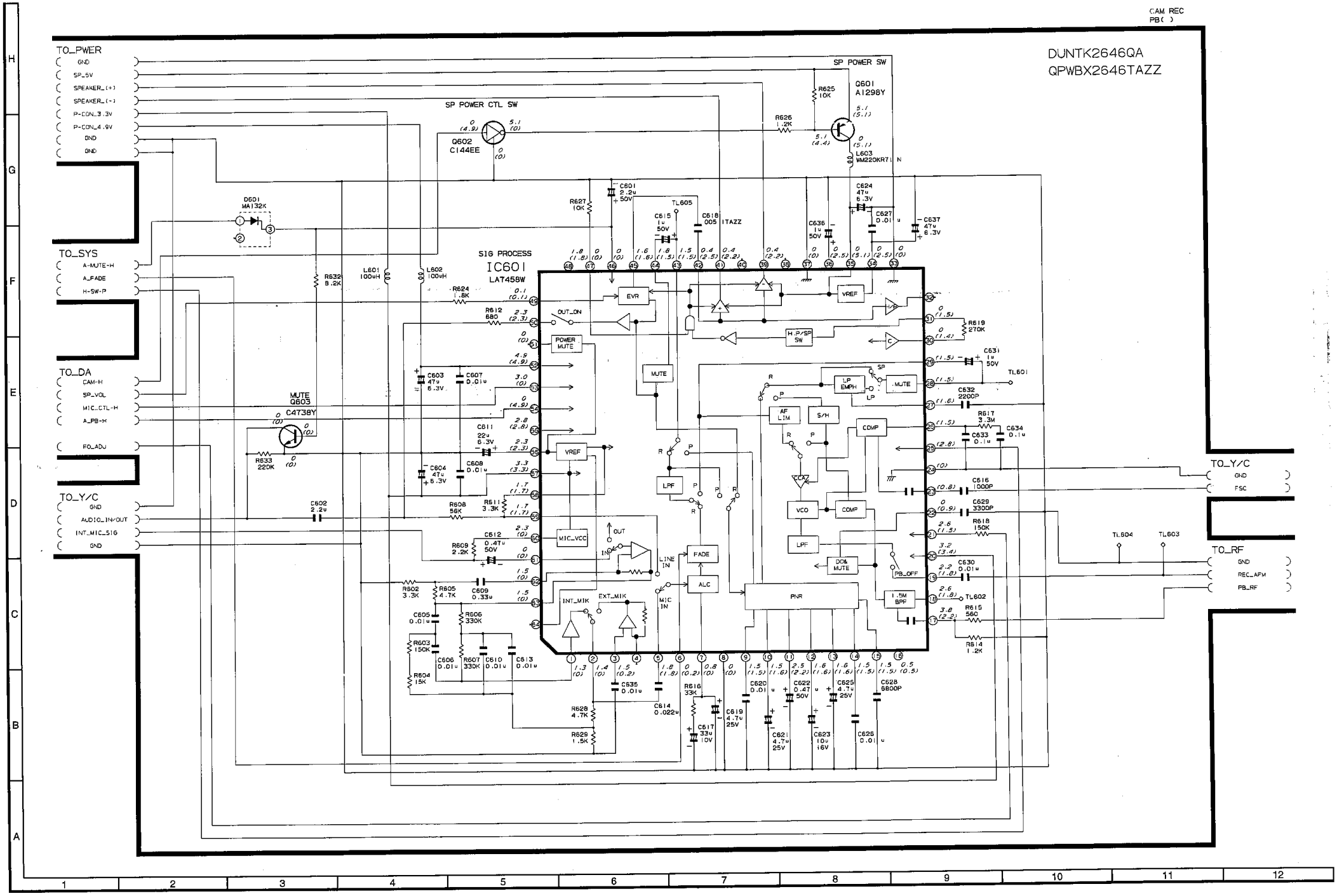
7-2. POWER CIRCUIT SCHEMATIC DIAGRAM

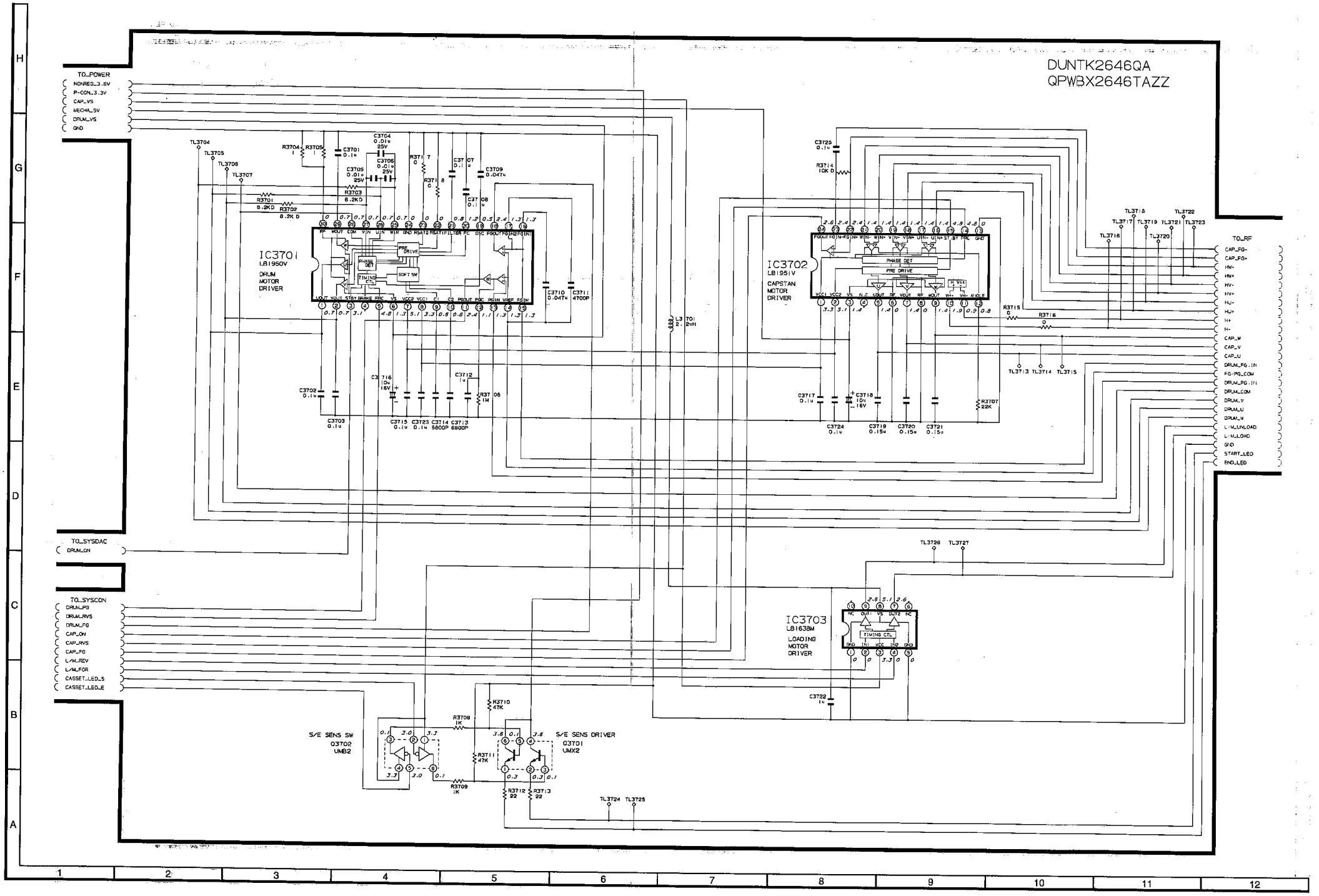
VL-E66S/H
VL-E78E

VL-E66S/H
VL-E78E

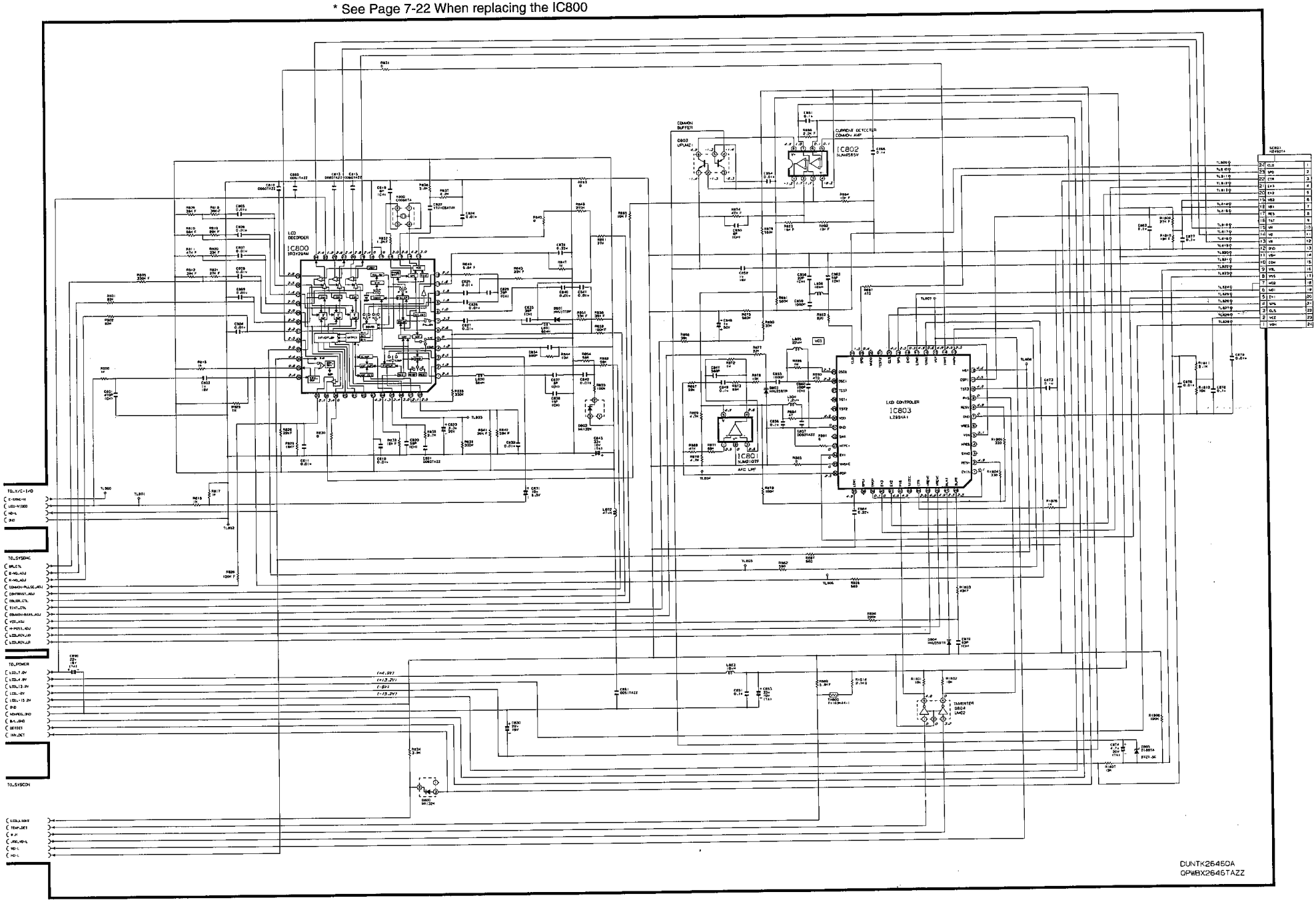
⚠ AND SHADED COMPONENTS – SAFETY-RELATED PARTS

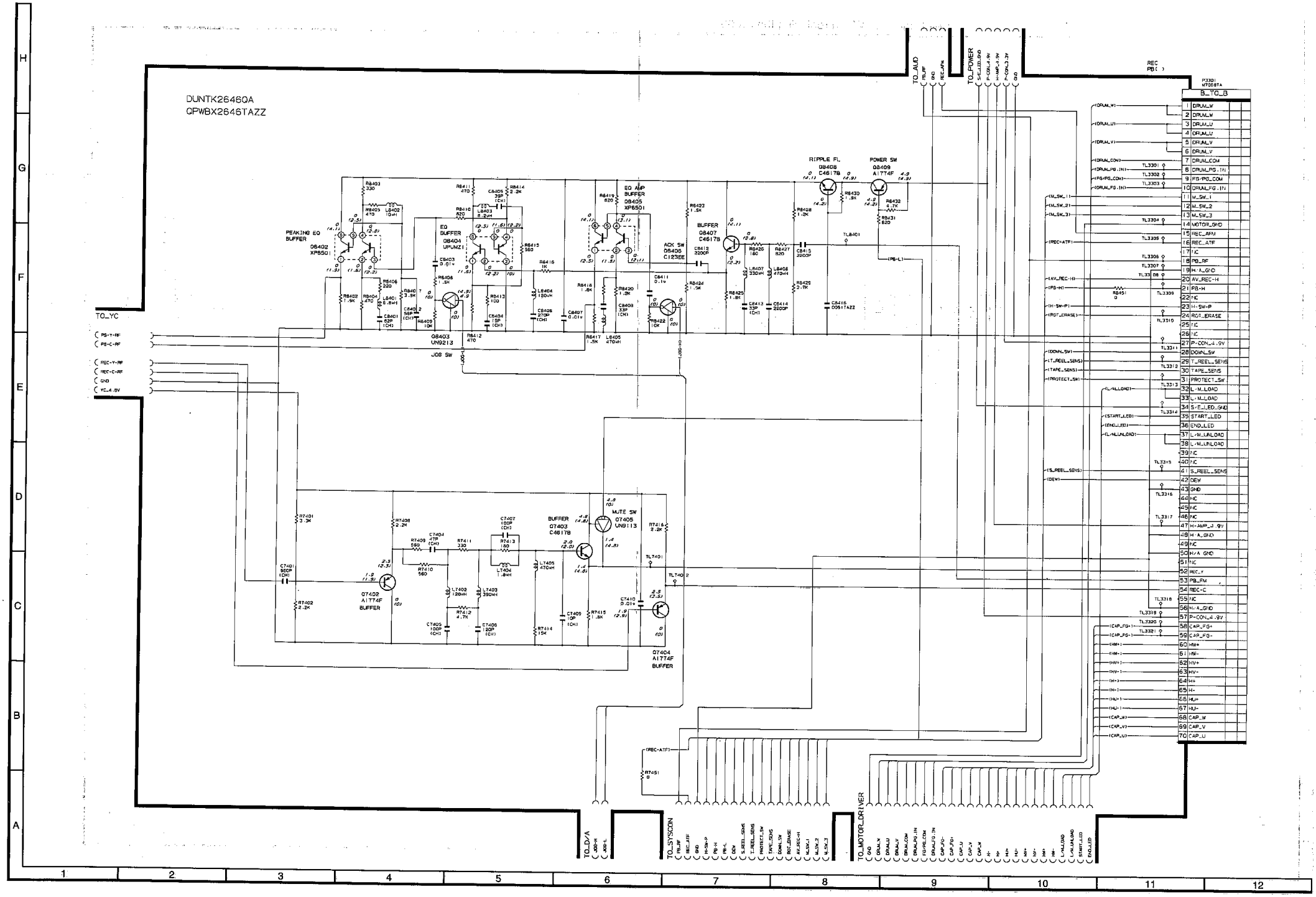


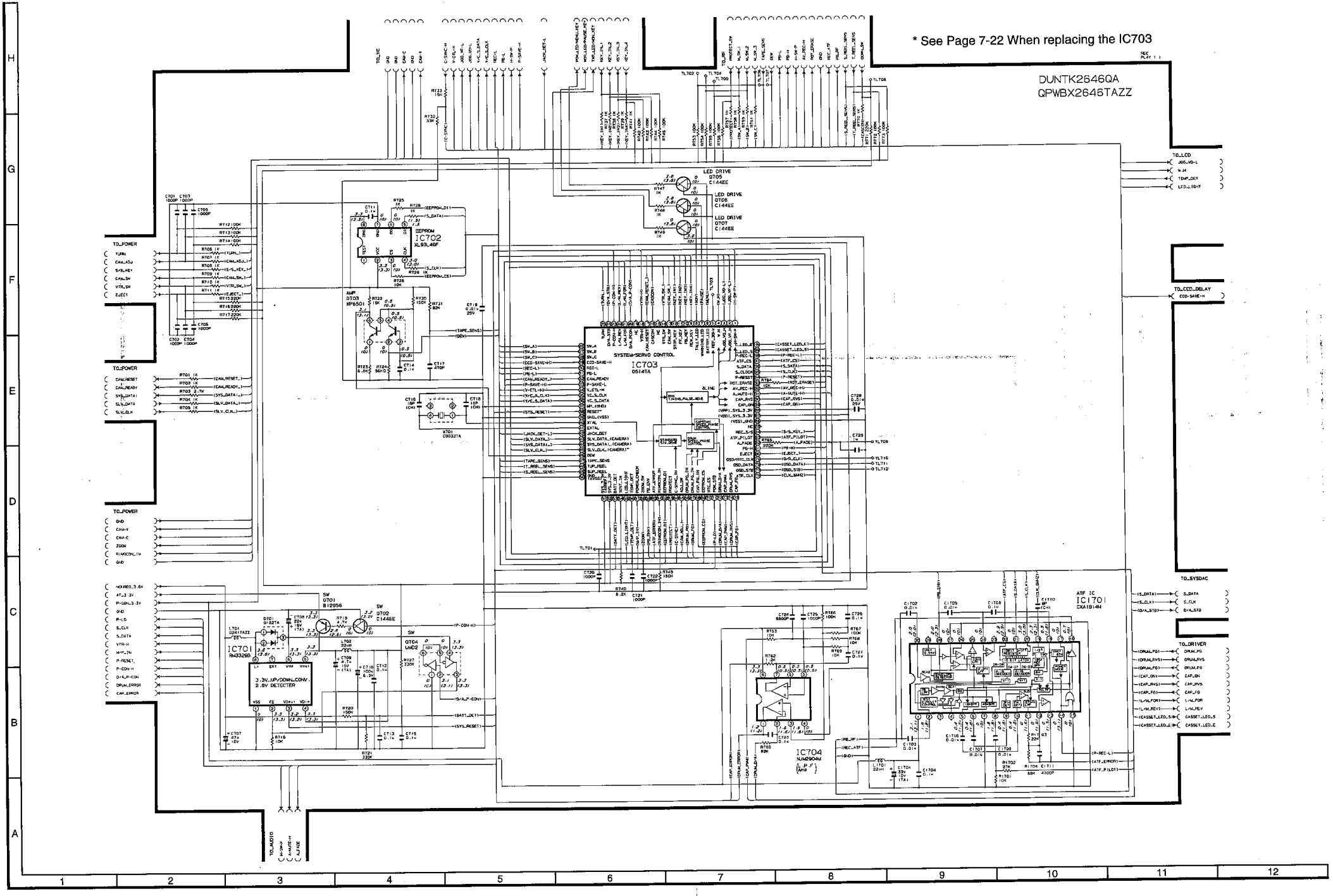

CAM REC
PB( )
DUNTK2646QA
QPWBX2646TAZZ
TO_PWER
GND
SP_5V
SPEAKER_(+)
SPEAKER_(-)
P-CON_3.3V
P-CON_4.9V
GND
GND
SP POWER SW
Q601
A1298Y
R625
10K
R626
1.2K
L603
WM220KR7
SP POWER CTL SW
Q602
C144EE
D601
MA132K
TO_SYS
A-MUTE-H
A_FADE
H-SW-P
R632
9.2K
L601
100uH
L602
100uH
SIG PROCESS
IC601
LA7458W
R627
10K
C601
2.2u
50V
TL605
C615
1u
50V
C618
005
C624
47u
6.3V
C627
0.01u
C636
1u
50V
C637
47u
6.3V
R624
1.8K
R612
680
OUT_ON
POWER MUTE
MUTE
EVR
VREF
H.P/SP SW
R619
270K
C631
1u
50V
TL601
LP EMPH
MUTE
AF LIM
S/H
COMP
C632
2200P
R617
3.3M
C633
0.1u
C634
0.1u
TO_DA
CAM-H
SP_VOL
MIC_CTL-H
A_PB-H
FO_ADJ
MUTE
Q603
C4738Y
R633
220K
C603
47u
6.3V
C607
0.01u
C611
22u
6.3V
C604
47u
6.3V
C608
0.01u
VREF
LPF
VCO
COMP
LPF
C616
1000P
C629
3300P
R618
150K
C630
0.01u
R615
560
R614
1.2K
TO_Y/C
GND
FSC
TO_Y/C
GND
AUDIO_IN/OUT
INT_MIC_SIG
GND
C602
2.2u
R608
56K
R611
3.3K
C612
0.47u
50V
R609
2.2K
MIC_VCC
OUT
IN
LINE IN
FADE
ALC
MIC IN
INT_MIK
EXT_MIK
PNR
DC& MUTE
PB_OFF
1.5M BPF
TL604
TL603
TL602
TO_RF
GND
REC_AFM
PB_RF
R602
3.3K
R605
4.7K
C609
0.33u
C605
0.01u
R606
330K
R603
150K
C606
0.01u
R607
330K
C610
0.01u
C613
0.01u
R604
15K
R628
4.7K
R629
1.5K
C635
0.01u
C614
0.022u
R616
33K
C617
33u
10V
C619
4.7u
25V
C620
0.01u
C621
4.7u
25V
C622
0.47u
50V
C623
10u
16V
C625
4.7u
25V
C626
0.01u
C628
6800P

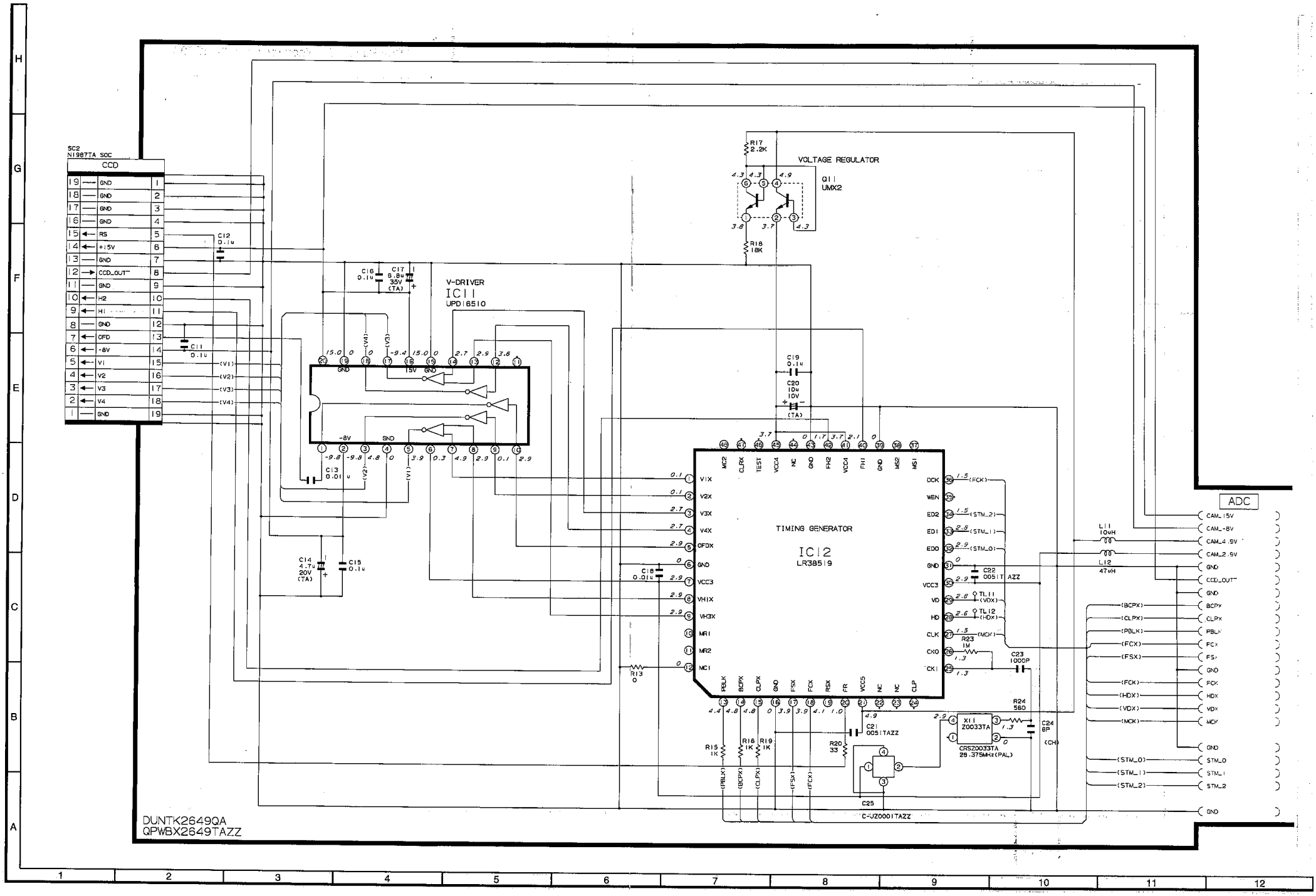

DUNTK2646QA
QPWBX2646TAZZ
TO_POWER
NONREG_3.8V
P-CON_3.3V
CAP_VS
MECHA_5V
DRUM_VS
GND
IC3701
LB1950V
DRUM
MOTOR
DRIVER
IC3702
LB1951V
CAPSTAN
MOTOR
DRIVER
IC3703
LB1638M
LOADING
MOTOR
DRIVER
TO_RF
CAP_FG-
CAP_FG+
HW-
HW+
HV-
HV+
HU-
HU+
H+
H-
CAP_W
CAP_V
CAP_U
DRUM_FG_IN
FG-PG_COM
DRUM_PG_IN
DRUM_COM
DRUM_V
DRUM_U
DRUM_W
L/ML_UNLOAD
L/ML_LOAD
GND
START_LED
END_LED
TO_SYSDAC
DRUM_ON
TO_SYSCON
DRUM_FG
DRUM_RVS
DRUM_FG
CAP_ON
CAP_RVS
CAP_FG
L/ML_REV
L/ML_FOR
CASSET_LED_S
CASSET_LED_E
S/E SENS SW
Q3702
UMB2
S/E SENS DRIVER
Q3701
UMX2

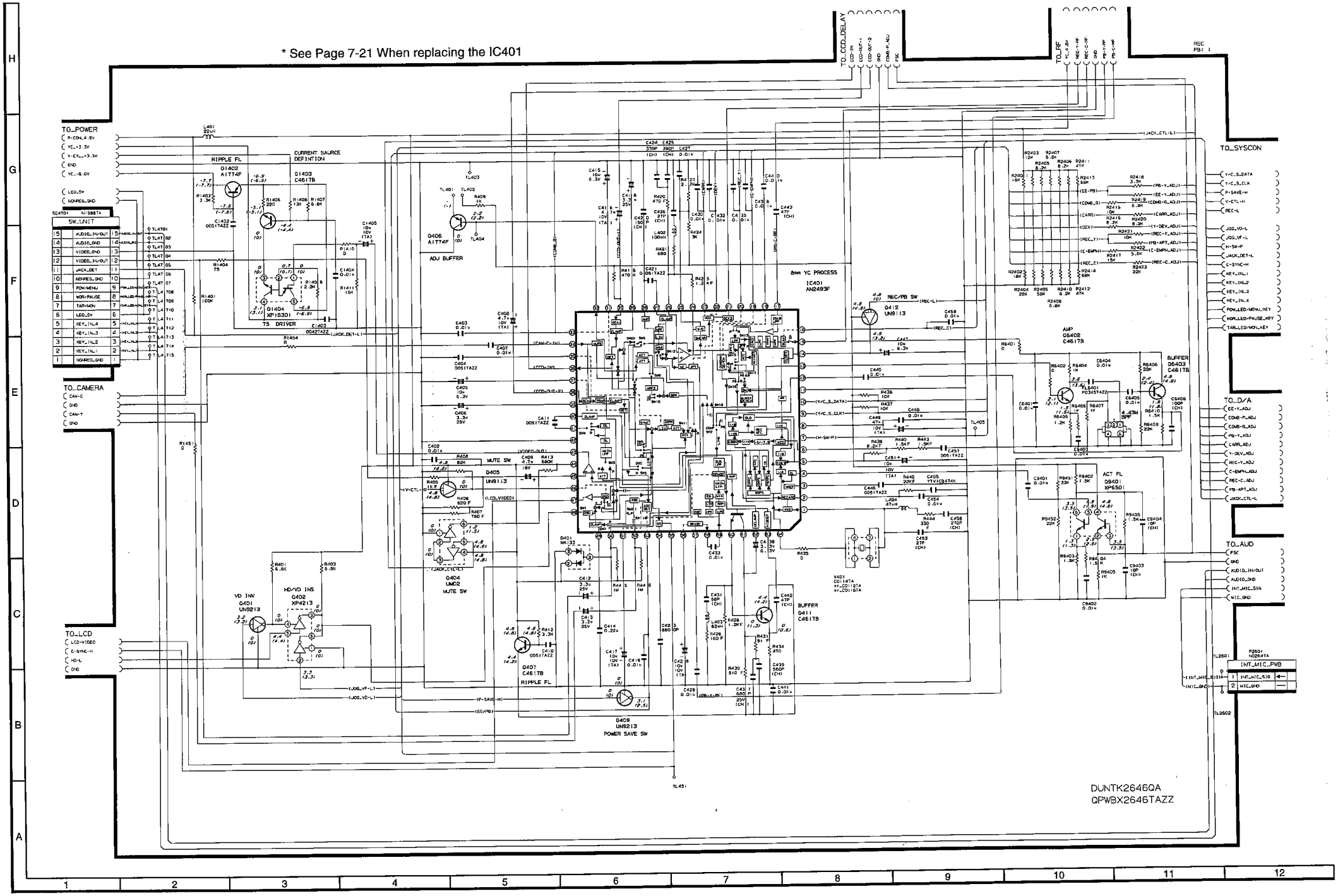
* See Page 7-22 When replacing the IC800

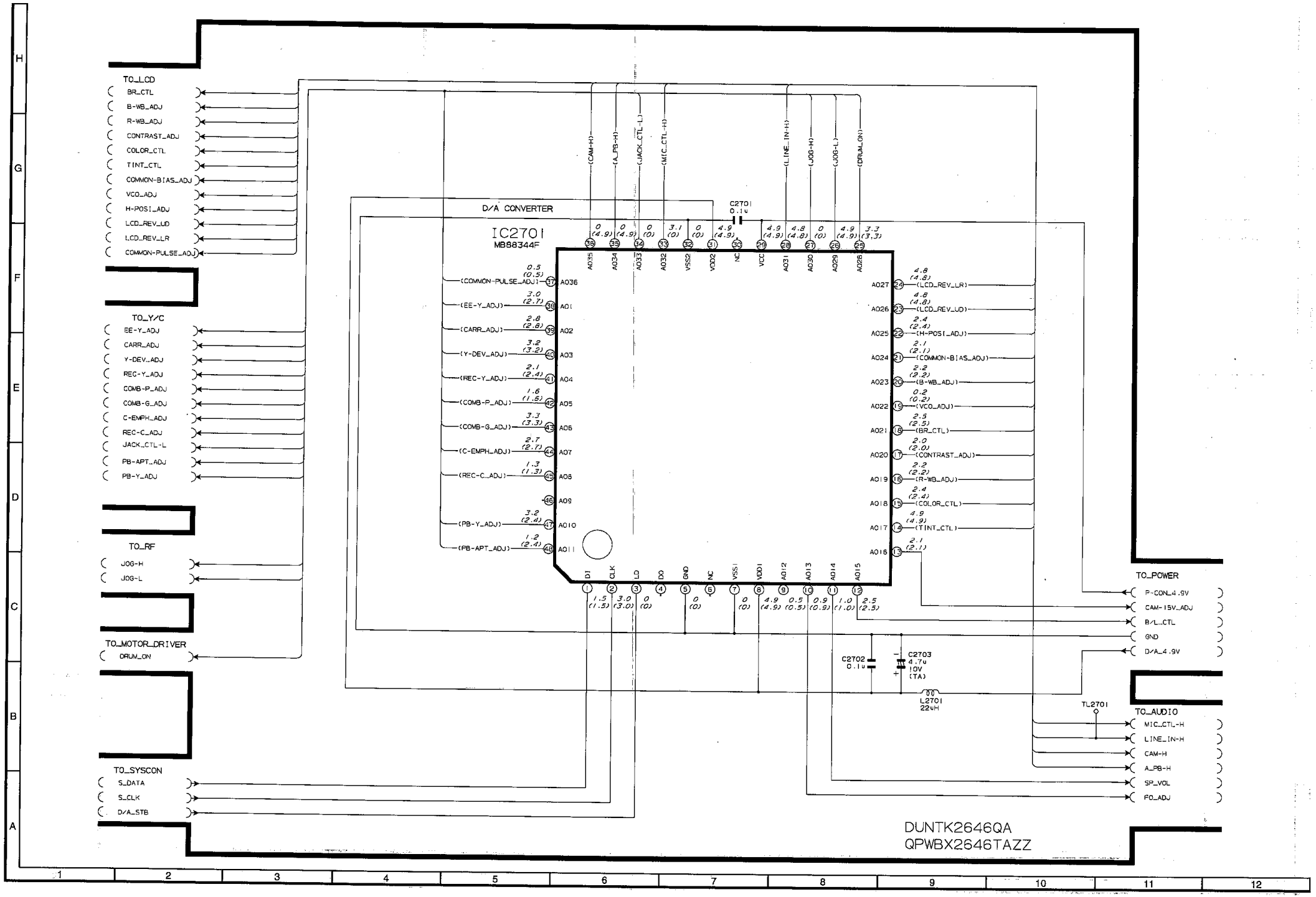



DUNTK2646QA
QPWBX2646TAZZ
TO_AUD
TO_POWER
TO_YC
TO_D/A
TO_SYSCON
TO_MOTOR_DRIVER
B_TO_B
PEAKING EQ BUFFER
EQ BUFFER
EQ AMP BUFFER
RIPPLE FL
POWER SW
BUFFER
ACK SW
MUTE SW
JOG SW
Q7402 AN774F BUFFER
Q7404 AN774F BUFFER

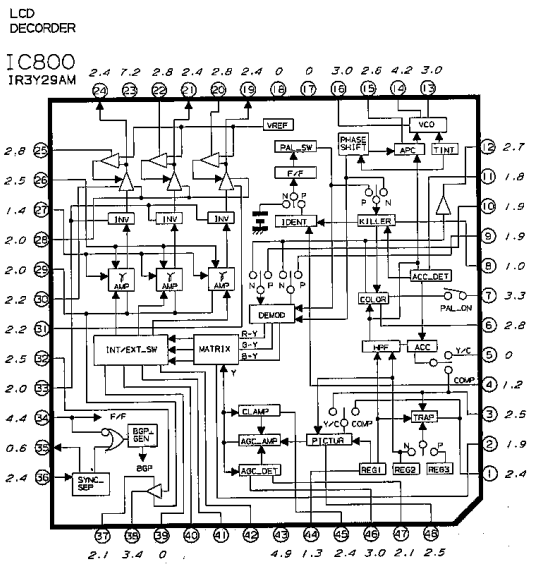

* See Page 7-22 When replacing the IC703
DUNTK2646QA
QPWBX2646TAZZ
SYSTEM/SERVO CONTROL
IC703
0514TA
EEPROM
IC702
XL93_46F
LED DRIVE
DTD5
C144EE
LED DRIVE
DTD6
C144EE
LED DRIVE
DTDT
C144EE
3.3V_UP/DOWN_CONV.
2.9V DETECTOR
IC701
RM3329B
IC704
NJM2904M
ATF IC
IC1701
CXA1814N
TO_POWER
TO_LCD
TO_CCD_DELAY
TO_SYSDAC
TO_DRIVER
TO_AUDIO

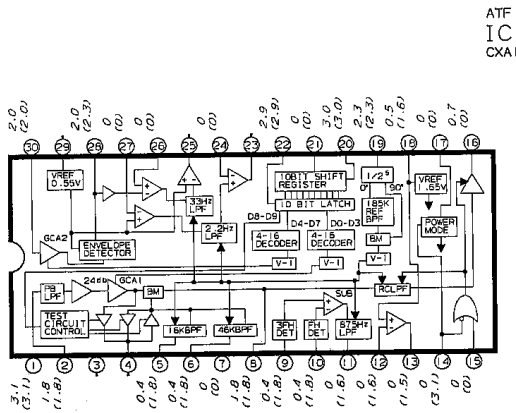

SC2
N1987TA SOC
CCD
V-DRIVER
IC11
UPD16510
TIMING GENERATOR
IC12
LR38519
VOLTAGE REGULATOR
Q11
UMX2
ADC
DUNTK2649QA
QPWBX2649TAZZ

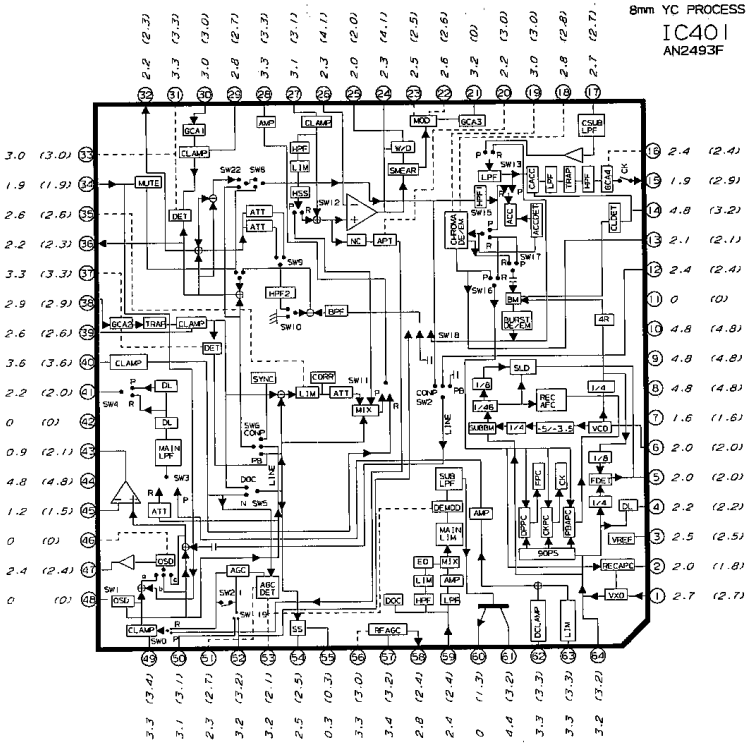

* See Page 7-21 When replacing the IC401
TO_POWER
TO_CAMERA
TO_LCD
TO_SYSCON
TO_D/A
TO_AUD
TO_CCD_DELAY
TO_RF
SW_UNIT
INT_MIC_PWB
RIPPLE FL
CURRENT SAURCE DEFINITION
75 DRIVER
ADJ BUFFER
8mm YC PROCESS
IC401
AN2493F
REC/PB SW
AMP
BUFFER
ACT FL
MUTE SW
VD INV
HD/VD INS
RIPPLE FL
POWER SAVE SW
DUNTK2646QA
QPWBX2646TAZZ

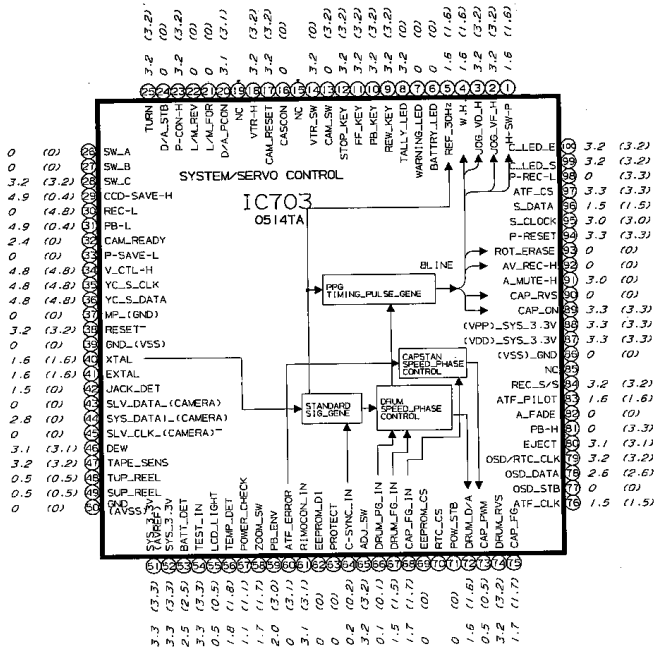

TO_LCD
BR_CTL
B-WB_ADJ
R-WB_ADJ
CONTRAST_ADJ
COLOR_CTL
TINT_CTL
COMMON-BIAS_ADJ
VCO_ADJ
H-POSI_ADJ
LCD_REV_UD
LCD_REV_LR
COMMON-PULSE_ADJ
TO_Y/C
EE-Y_ADJ
CARR_ADJ
Y-DEV_ADJ
REC-Y_ADJ
COMB-P_ADJ
COMB-G_ADJ
C-EMPH_ADJ
REC-C_ADJ
JACK_CTL-L
PB-APT_ADJ
PB-Y_ADJ
TO_RF
JOG-H
JOG-L
TO_MOTOR_DRIVER
DRUM_ON
TO_SYSCON
S_DATA
S_CLK
D/A_STB
D/A CONVERTER
IC2701
MB88344F
C2701
0.1u
(CAM-H)
(A_PB-H)
(JACK_CTL-L)
(MIC_CTL-H)
(LINE_IN-H)
(JOG-H)
(JOG-L)
(DRUM_ON)
AO35
AO34
AO33
AO32
VSS2
VDD2
NC
VCC
AO31
AO30
AO29
AO28
(COMMON-PULSE_ADJ)
(EE-Y_ADJ)
(CARR_ADJ)
(Y-DEV_ADJ)
(REC-Y_ADJ)
(COMB-P_ADJ)
(COMB-G_ADJ)
(C-EMPH_ADJ)
(REC-C_ADJ)
(PB-Y_ADJ)
(PB-APT_ADJ)
AO36
AO01
AO02
AO03
AO04
AO05
AO06
AO07
AO08
AO09
AO010
AO011
AO027
AO026
AO025
AO024
AO023
AO022
AO021
AO020
AO019
AO018
AO017
AO016
(LCD_REV_LR)
(LCD_REV_UD)
(H-POSI_ADJ)
(COMMON-BIAS_ADJ)
(B-WB_ADJ)
(VCO_ADJ)
(BR_CTL)
(CONTRAST_ADJ)
(R-WB_ADJ)
(COLOR_CTL)
(TINT_CTL)
DI
CLK
LD
DO
GND
NC
VSS1
VDD1
AO12
AO13
AO14
AO15
TO_POWER
P-CON_4.9V
CAM-15V_ADJ
B/L_CTL
GND
D/A_4.9V
C2702
0.1u
C2703
4.7u
10V
(TA)
L2701
22uH
TL2701
TO_AUDIO
MIC_CTL-H
LINE_IN-H
CAM-H
A_PB-H
SP_VOL
FO_ADJ
DUNTK2646QA
QPWBX2646TAZZ

7-11. SYSTEM/SERVO CONTROL AND Y/C INTERGRATED CIRCUIT SCHEMATIC DIAGRAM

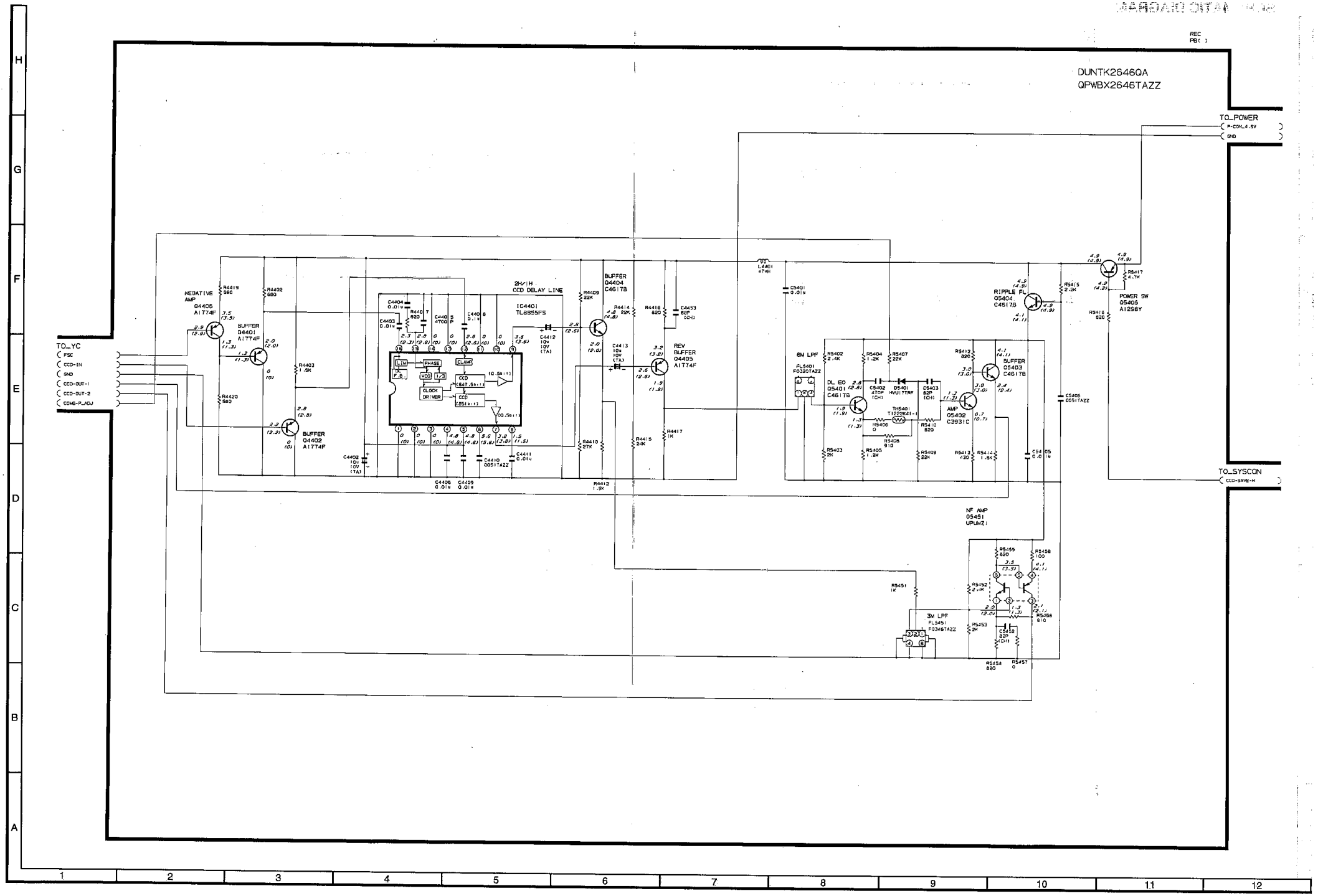


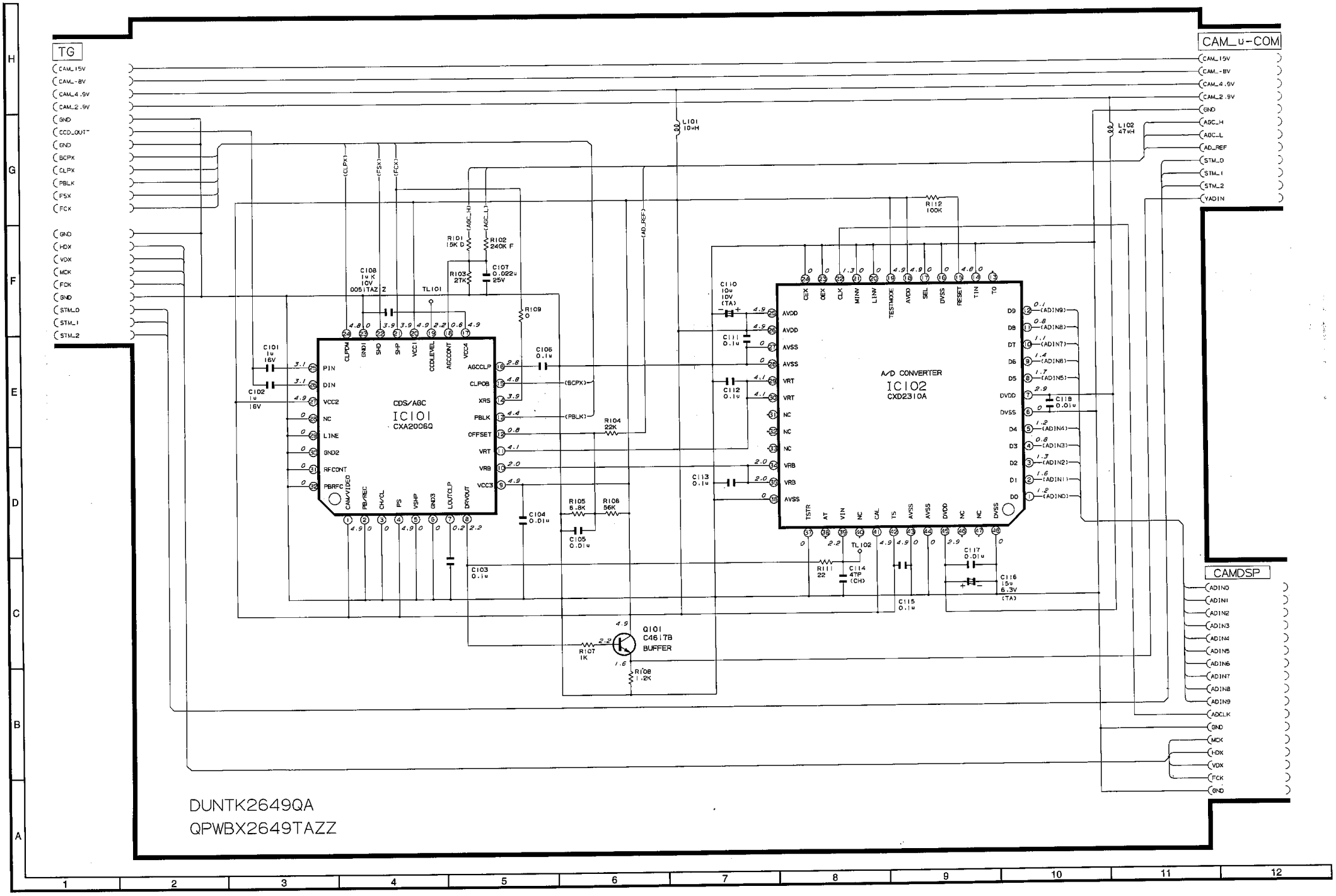




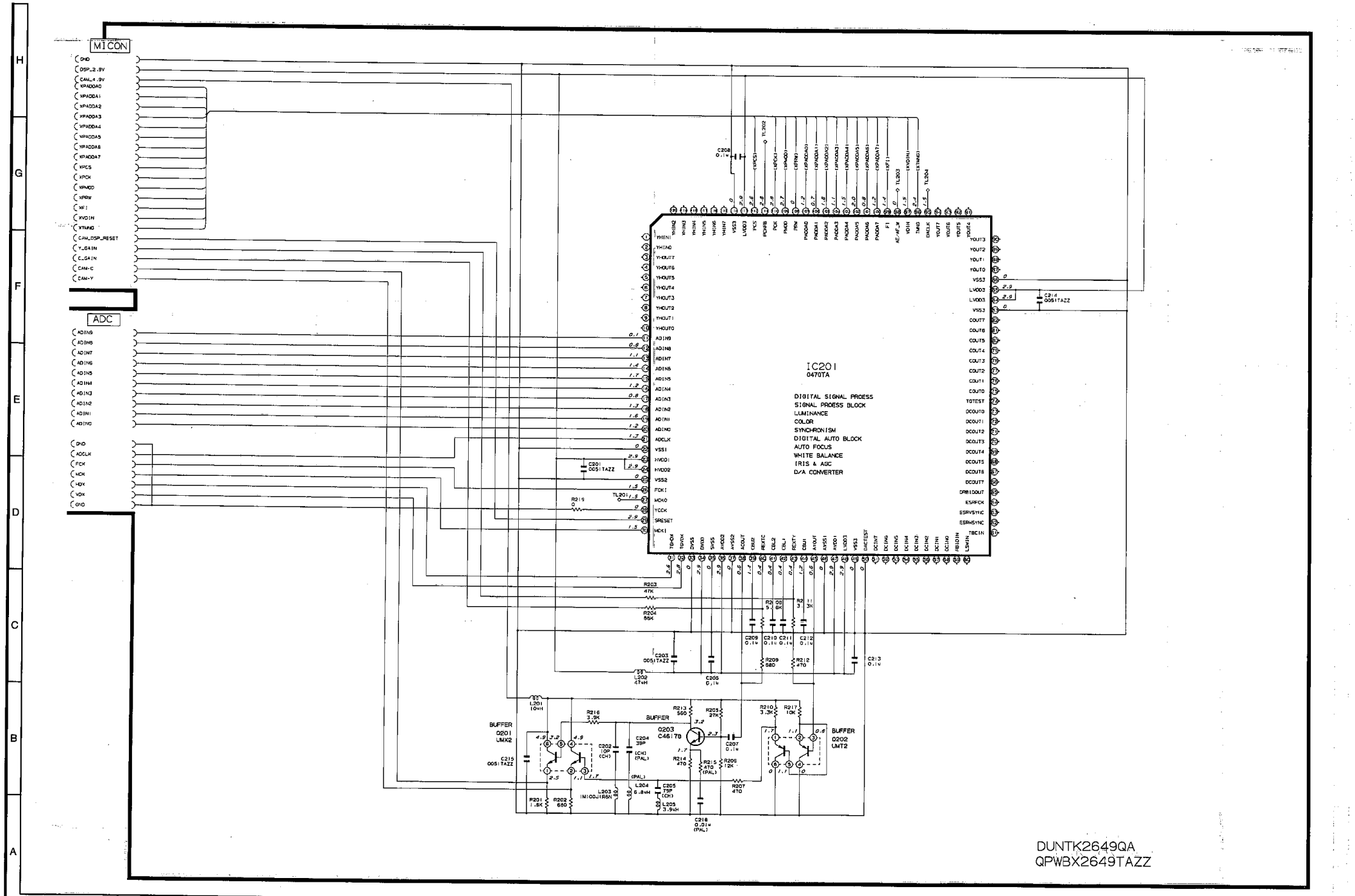


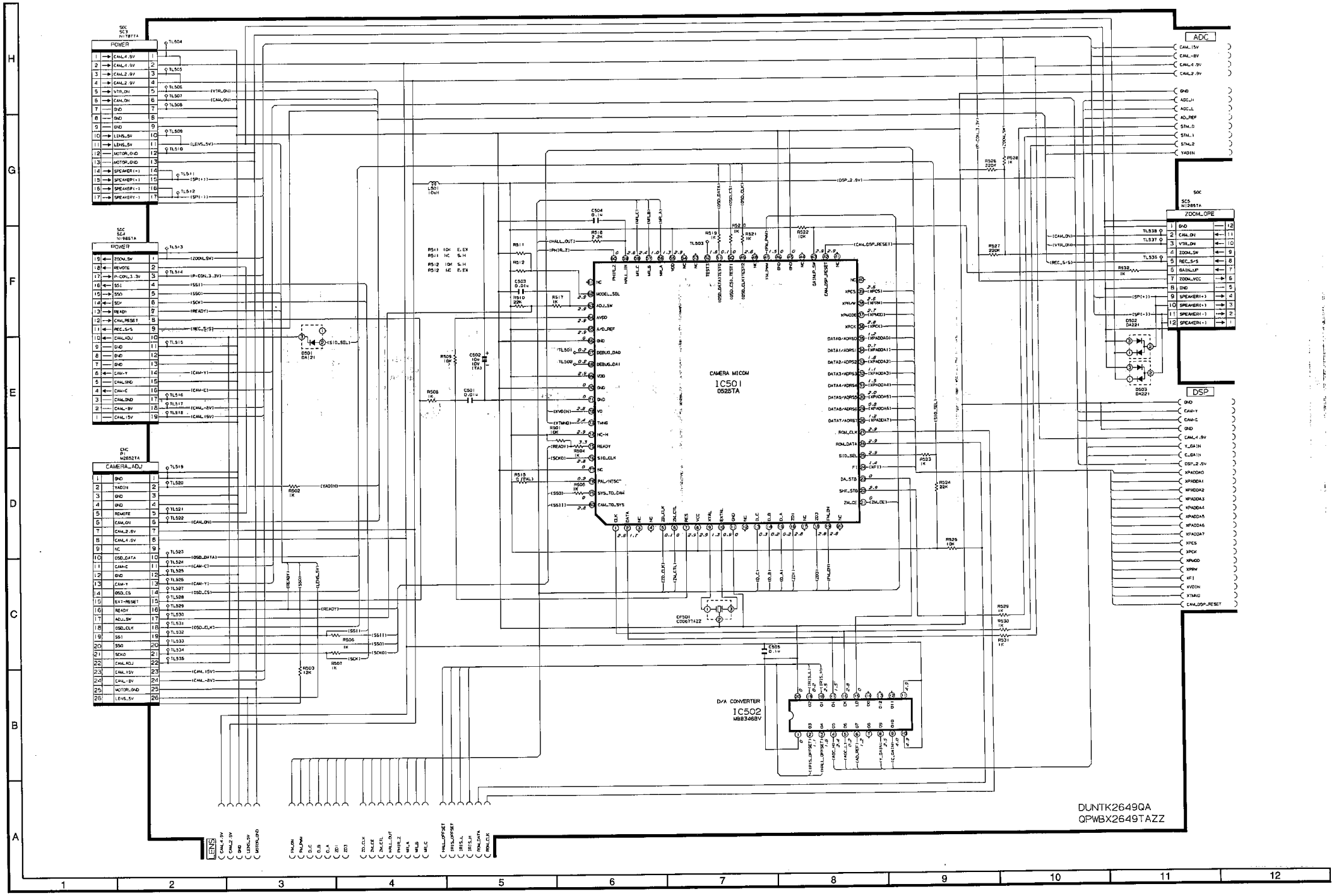
7-12. CCD DELAY CIRCUIT SCHEMATIC DIAGRAM

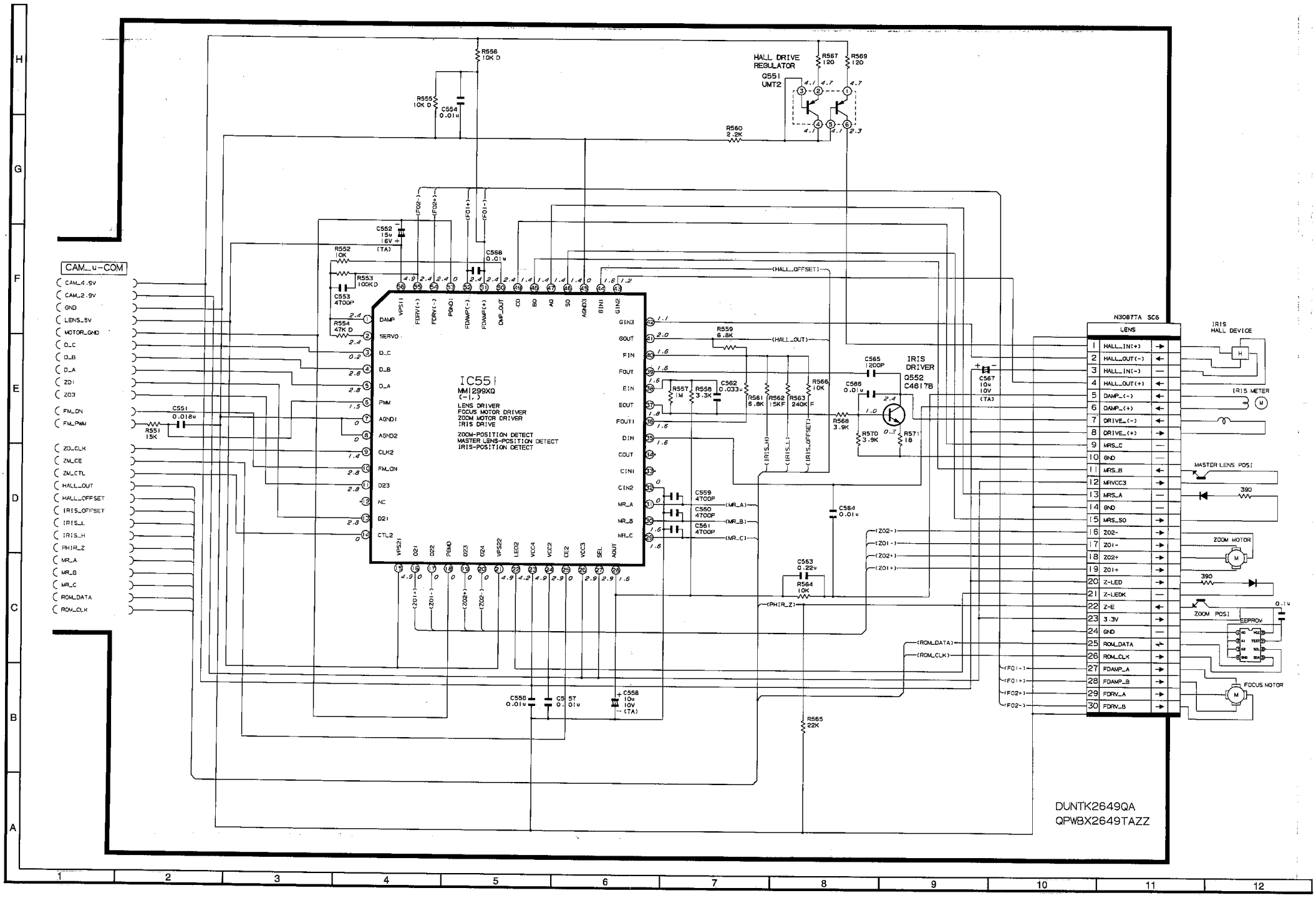


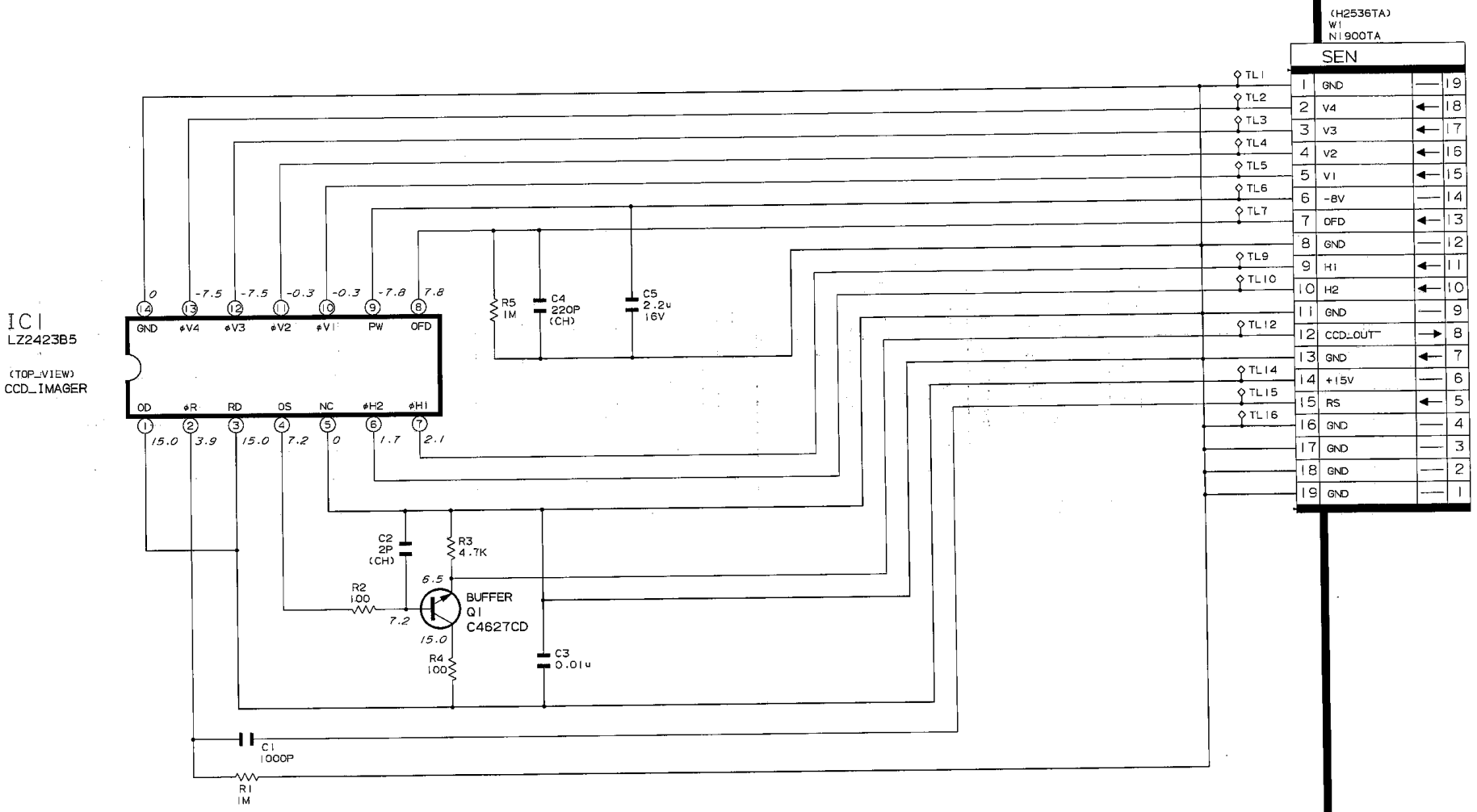


DUNTK2649QA
QPWBX2649TAZZ

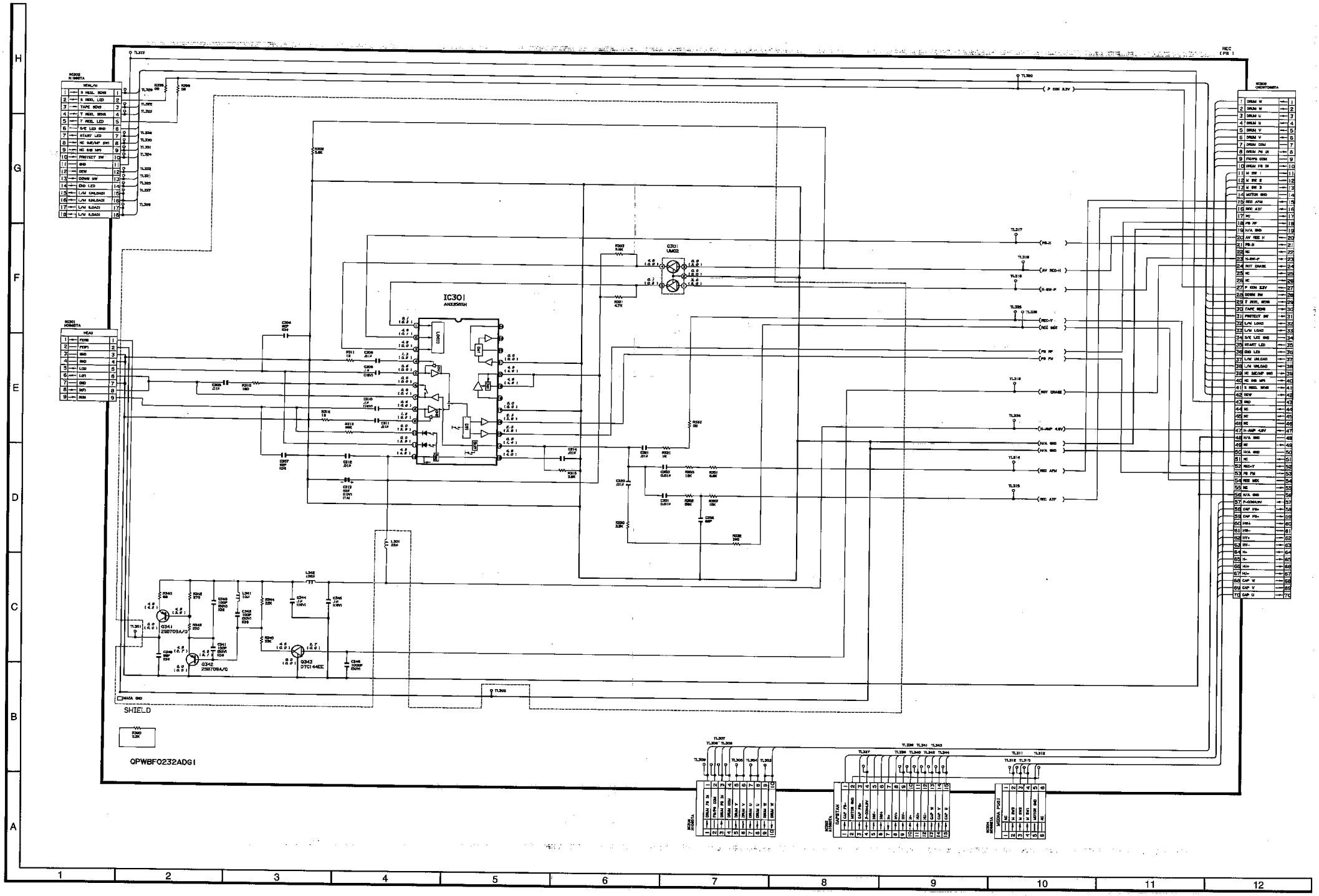

MICON
ADC
IC201
0470TA
DIGITAL SIGNAL PROCESS
SIGNAL PROCESS BLOCK
LUMINANCE
COLOR
SYNCHRONISM
DIGITAL AUTO BLOCK
AUTO FOCUS
WHITE BALANCE
IRIS & AGC
D/A CONVERTER
BUFFER
Q201
UMX2
BUFFER
Q203
C4617B
BUFFER
Q202
UMT2
DUNTK2649QA
QPWBX2649TAZZ


POWER
CAMERA_ADJ
CAMERA MICOM
IC501
D525TA
D/A CONVERTER
IC502
MB3468V
ADC
DSP
ZOOM_OPE
LENS
DUNTK2649QA
QPWBX2649TAZZ


IC551
MM1299XQ
LENS DRIVER
FOCUS MOTOR DRIVER
ZOOM MOTOR DRIVER
IRIS DRIVE
ZOOM-POSITION DETECT
MASTER LENS-POSITION DETECT
IRIS-POSITION DETECT
HALL DRIVE REGULATOR
Q551 UMT2
IRIS DRIVER
Q552 C4617B
CAM_u-COM
LENS
IRIS HALL DEVICE
IRIS METER
MASTER LENS POSI
ZOOM MOTOR
ZOOM POSI
EEPROM
FOCUS MOTOR
DUNTK2649QA
QPWBX2649TAZZ

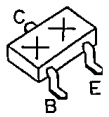


DUNTK2667PM00
QPWBX2667TAZZ


IC301
AN8256SH
Q341
2SB709A/Q
Q342
2SB709A/Q
Q343
DTC144EE
Q301
UMG2
SHIELD
QPWBF0232ADG1

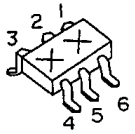
VL-E66S/H
VL-E78E

8. SEMICONDUCTOR LEAD IDENTIFICATION



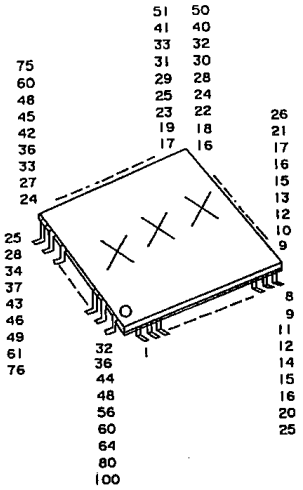
2SA1298Y
2SA1774F
2SA1832Y
2SB12956
2SC4555
2SC4738
2SC3931C
2SD2216
DTA144EE
2SC4627C
2SC4617B

DTC144EE
DTC323TK
RN2104
2SD1328-S
2SA1037KQ
DTA114EE
UN9213
UN9113
DTC123EE
UN9110



UMD2
UMT2
UMX2
UMZ1
XP4111

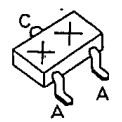
XP4113
XP4213
XP4601
XP6501
UMH2
UPUMZ1



MB3785V
IX0470TA
IX0525TA
IR3Y29AM

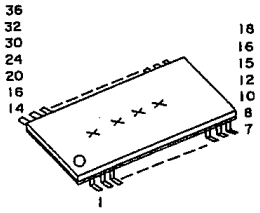
LZ95NA1
AN2493F
LA7458W
IX0514TA
BA9732KV
LR38519

CXD2310A
CXA2006Q
MM1299XQ



DAN222

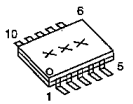
MA132WK



IX0238TA
LB1951V
M62352GP
MC14053V
MB3775FV
TL8855FS

AN3358SH
MB8346BV
UPD16510
LB1850V
NJU4066V
LB1843V

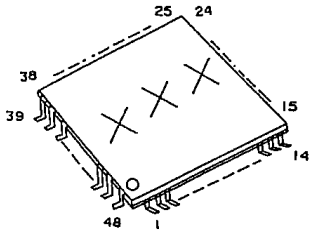
LB1882V
CXA1814N



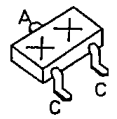
LB1683M

RN1102
Q1604

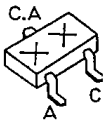
EX0179TA
D805



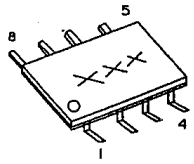
M52369FP



MA132WA
DX0182TA



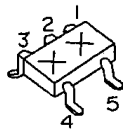
MA133
MA147



BA7655AF
ST93C46T
NJM4565V

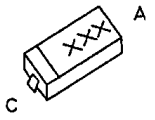
NJM4558M
NJM2904M
RM3329B

TDA7052A
NJM2233V
NJM4565V

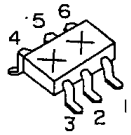


UMG2
S8435CF
XP1501
NJM2107F
SC14S66F
SC7S08F
UMC5
XP1B301
XP1C301
XP1401

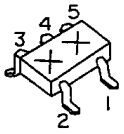
2SB1121T
2SB1132Q
2SB1302S
2SB1123T
SB20W03P
2SK2316



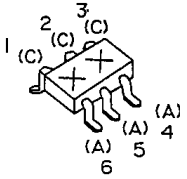
SFPB54
HVU17TRF
EX0870CE
HVU359TR



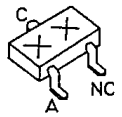
RN4604
XN4402
XN4504
XN6401



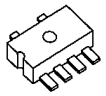
FMY1



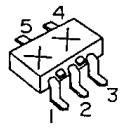
FC903
IMN10



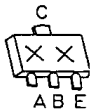
DA121
MA132K
EX0152TA



FX803



FP301

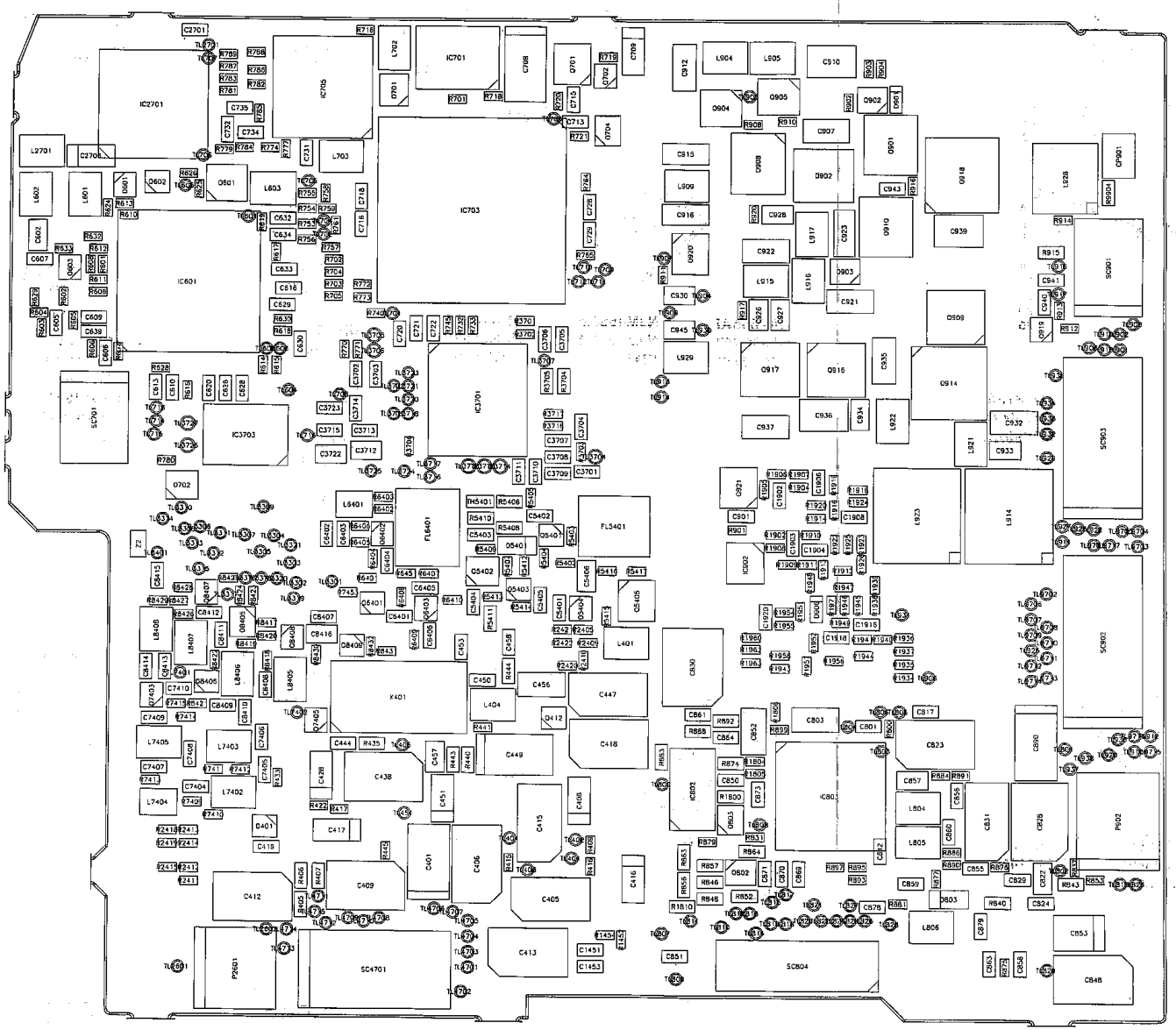


MPL1

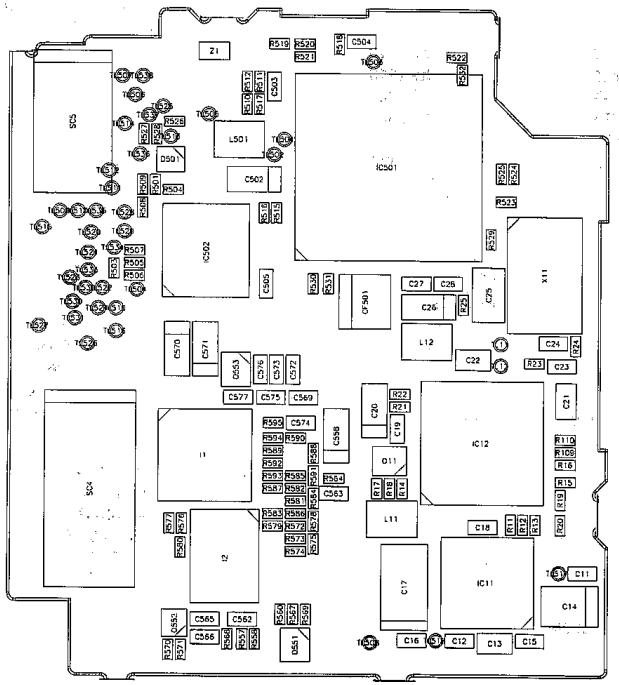
9. PRINTED WIRING BOARD ASSEMBLIES

9-1. P.W.B.

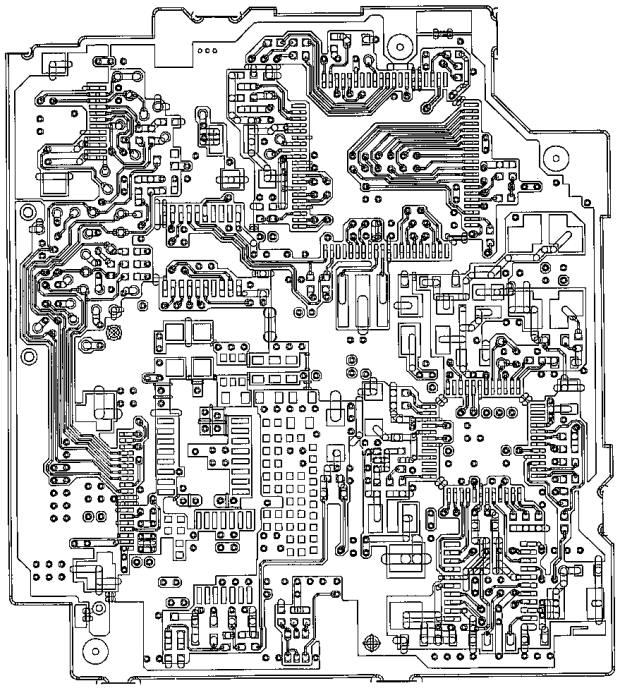
SIDE A
VCR BOARD



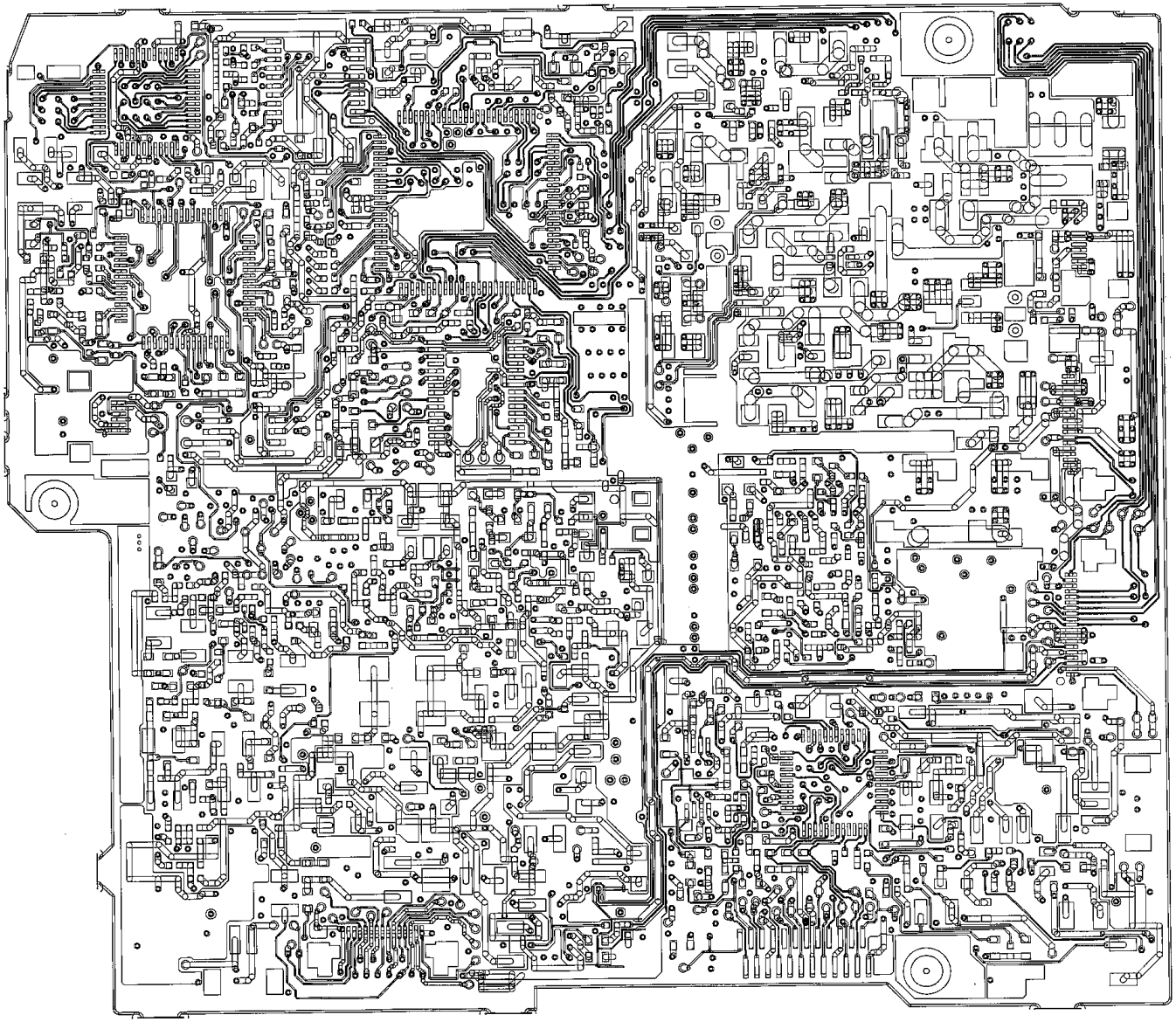
SIDE A
CAMERA BOARD



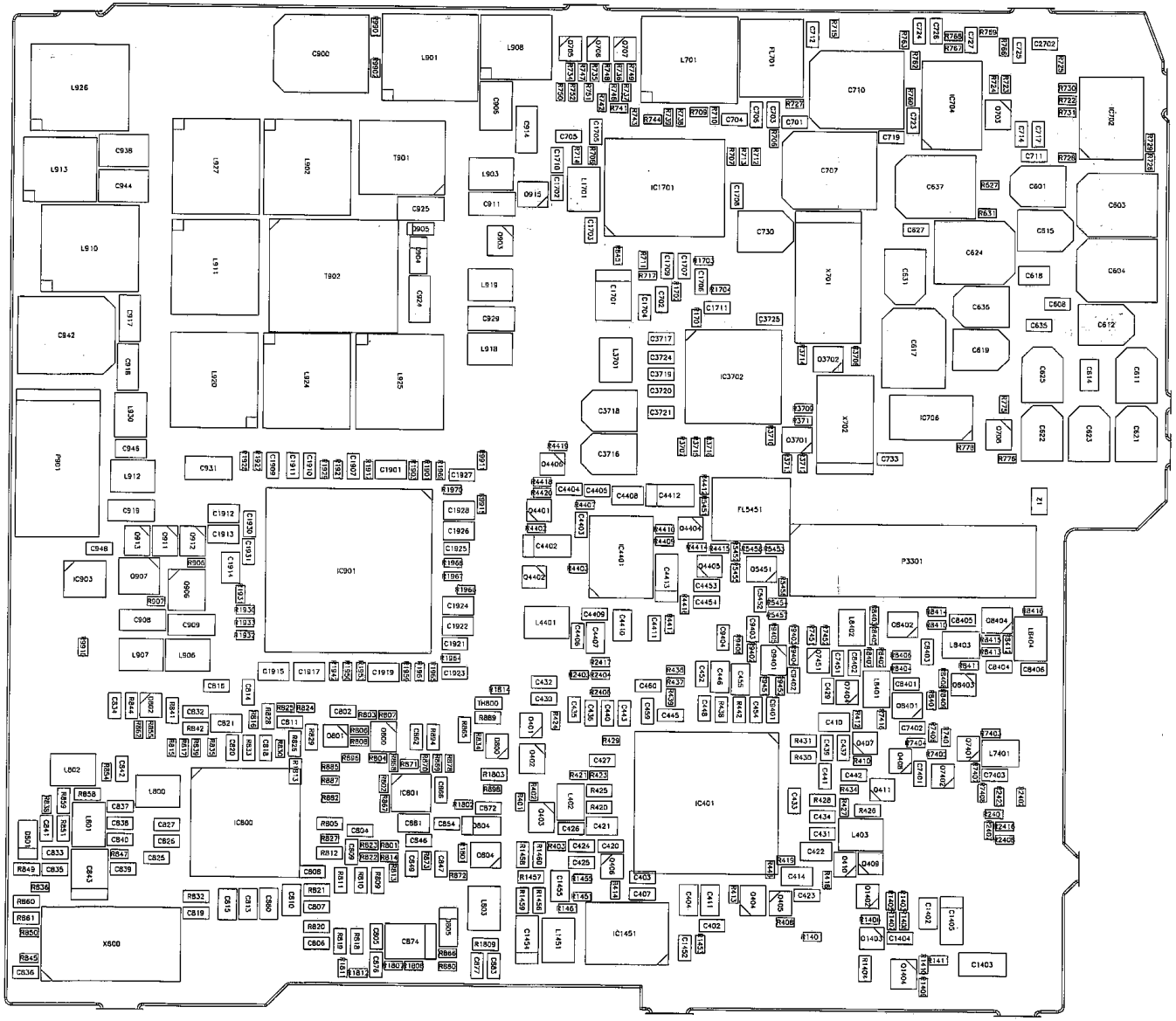
SIDE A
CAMERA BOARD



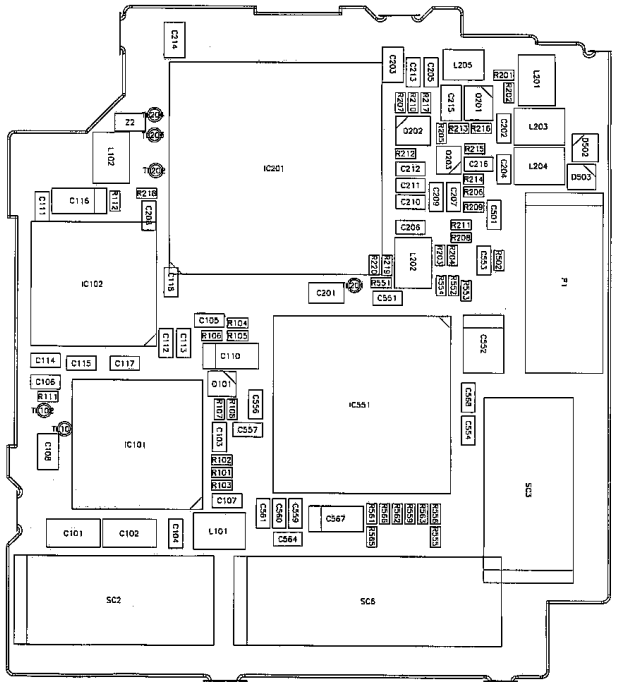
SIDE A
VCR BOARD



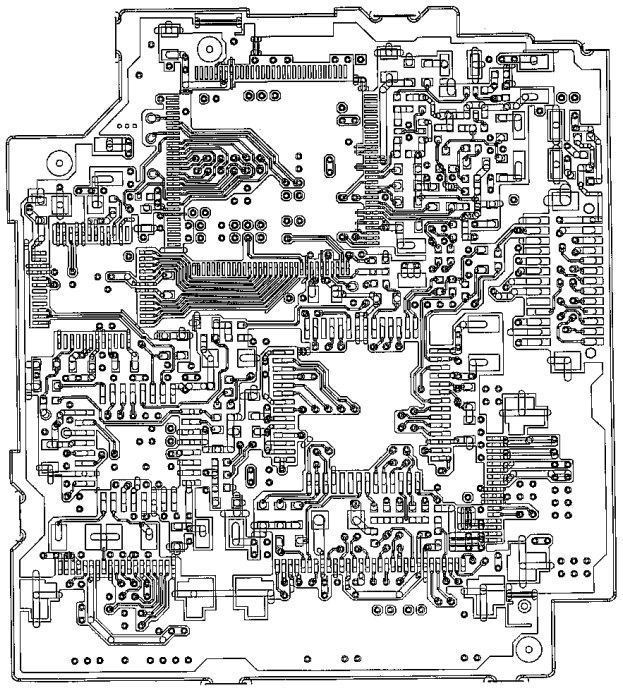
SIDE B
VCR BOARD



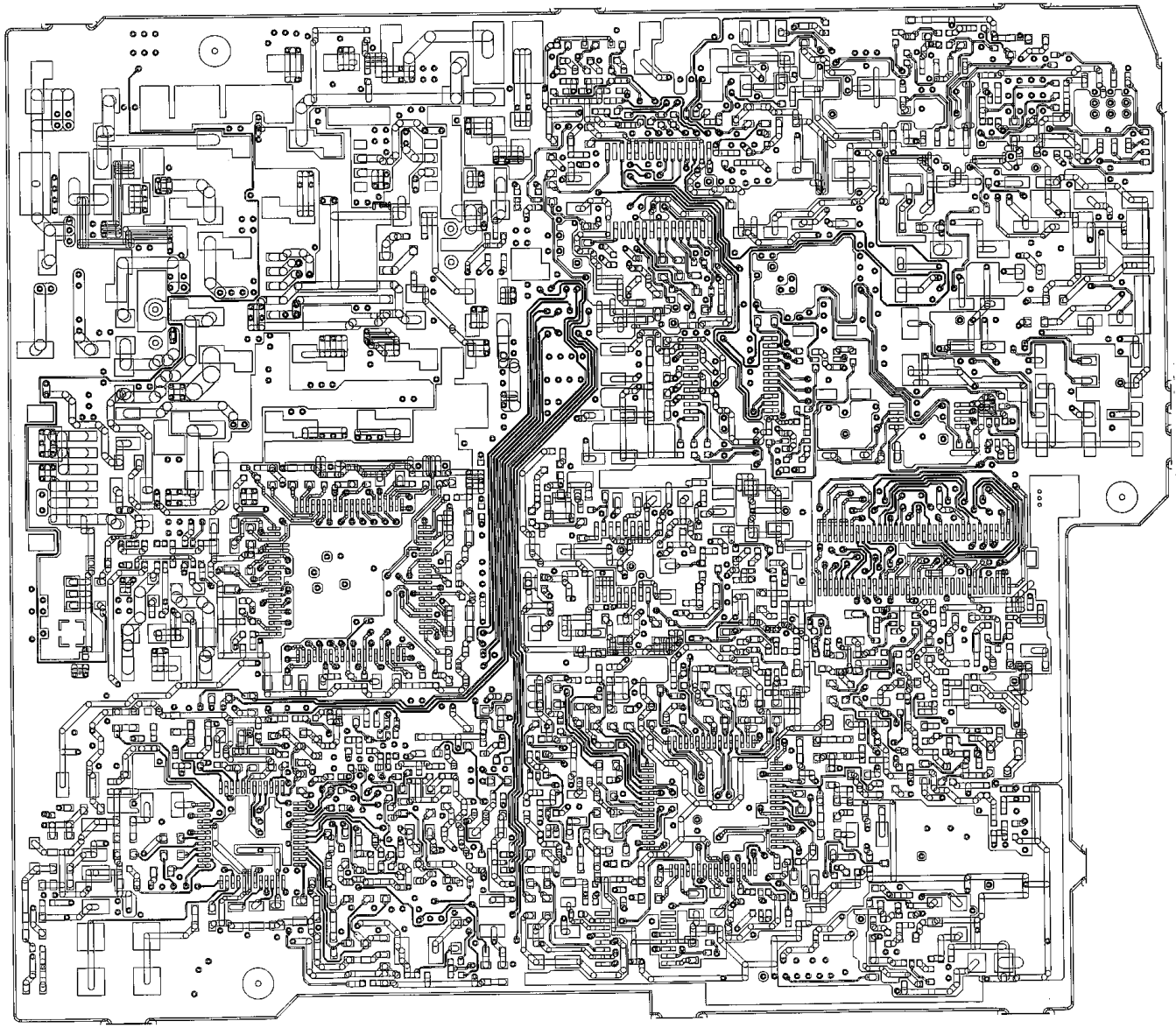
SIDE B
CAMERA BOARD



SIDE B
CAMERA BOARD



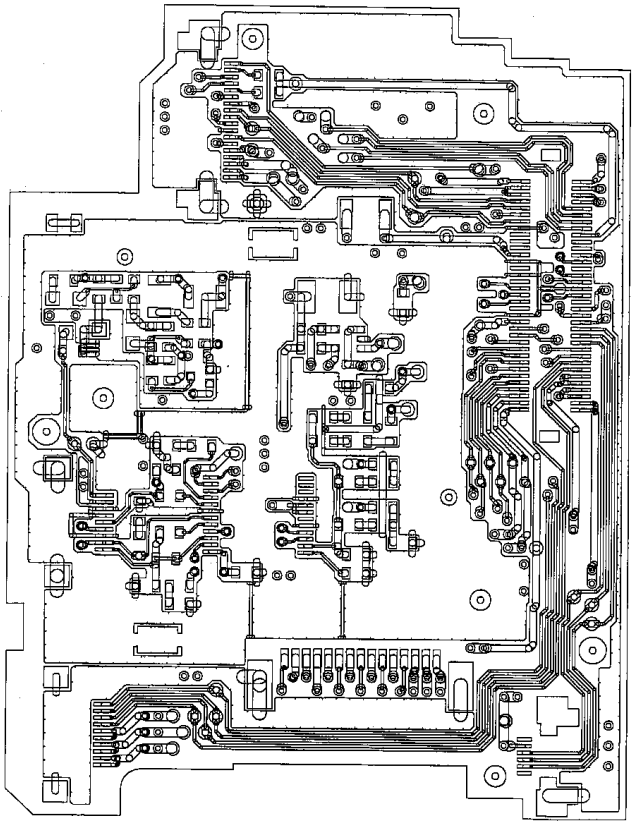
SIDE B
VCR BOARD

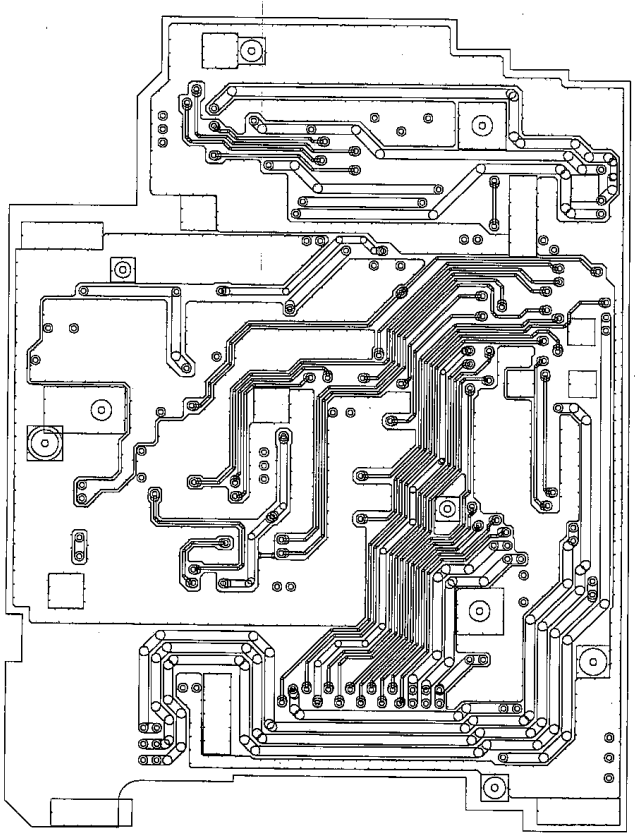


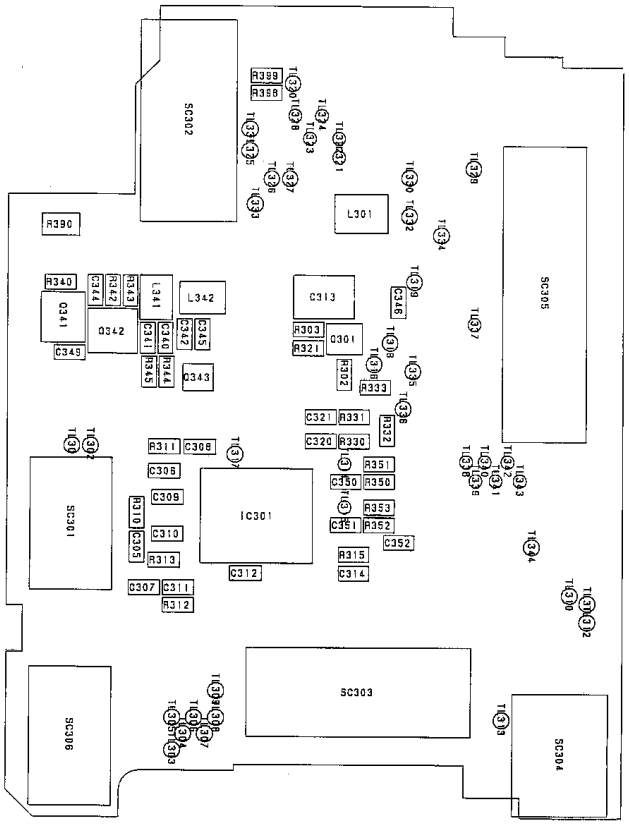
9-5. HEAD AMP P.W.B.

VL-E66S/H
VL-E78E

VL-E66S/H
VL-E78E

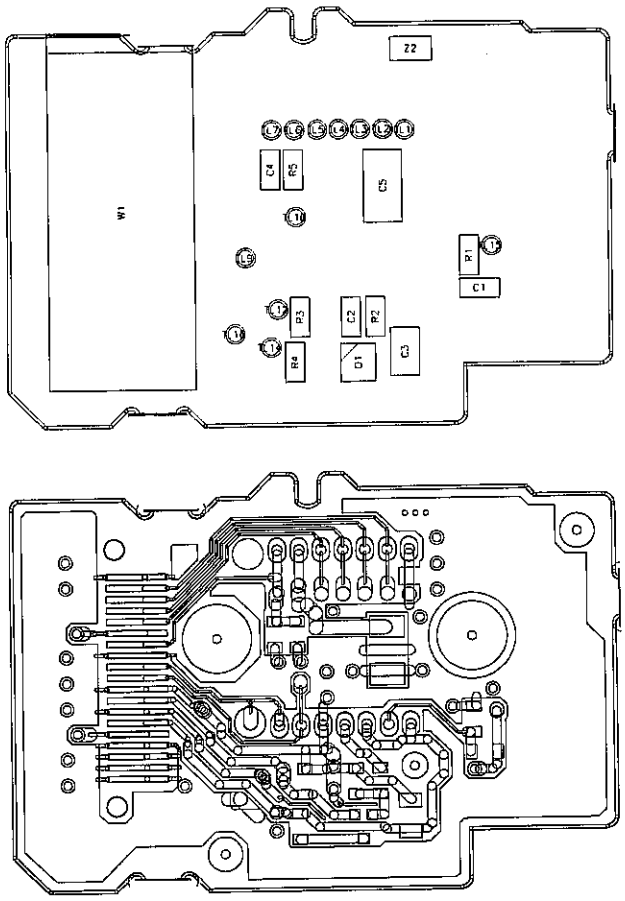




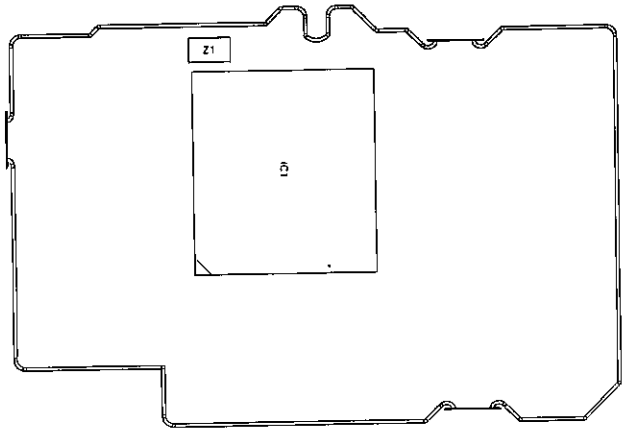


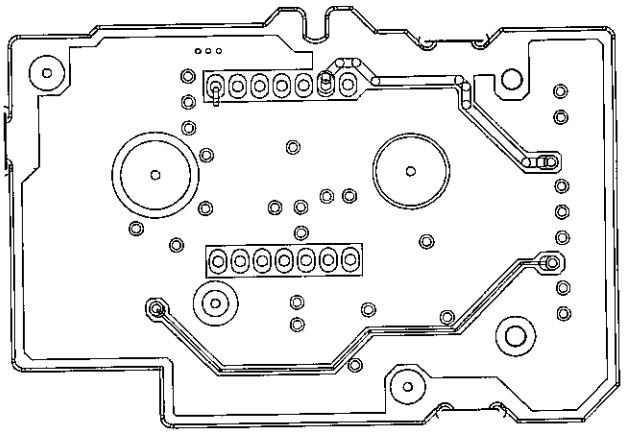
9-6. CCD P.W.B.

SIDE A



SIDE B





10. REPLACEMENT PARTS LIST/ EXPLODED VIEWS

ELECTRICAL PARTS LIST

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

"HOW TO ORDER REPLACEMENT PARTS"

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code

PRINTED WIRING BOARD ASSEMBLIES

(NOT REPLACEMENT ITEM)

	DUNTK2667PM00	J	CCD Unit(VL-E66S/H)	—
	DUNTK2667PM01	J	CCD Unit(VL-E78E)	—
	DUNTK2646QA00	J	VCR Unit(VL-E66S/H)	—
	DUNTK2646QA01	J	VCR Unit(VL-E78E)	—
	DUNTK2649QA00	J	CAMERA Unit(VL-E66S/H)	—
	DUNTK2649QA01	J	CAMERA Unit(VL-E78E)	—
	RAMP-0017TAN0	J	HEAD AMP Unit	—

DUNTK2667PM00 CCD UNIT(VL-E66S/H)
DUNTK2667PM01 CCD UNIT(VL-E78E)

INTEGRATED CIRCUITS

IC1	VHiLZ2423B5-1	J	LZ2423B5	BE

TRANSISTORS

Q1	VS2SC4627CD-1	J	Transistor	AB

CAPACITORS

C1	VCKYCY1HB102K	J	1000p	50V	Ceramic	AA
C2	VCCCCY1HH2R0CJ	J	2.0p	50V	Ceramic	AA
C3	VCKYTV1HF103Z	J	0.01	50V	Ceramic	AA
C4	VCCCCY1HH221J	J	220p	50V	Ceramic	AA
C5	VCKYTQ1CF225Z	J	2.2	16V	Ceramic	AB

RESISTORS

R1	VRS-CY1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R2	VRS-CY1JF101J	J	100	1/16W	Metal Oxide	AA
R3	VRS-CY1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R4	VRS-CY1JF101J	J	100	1/16W	Metal Oxide	AA
R5	VRS-CY1JF105J	J	1.0M	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code

DUNTK2646QA00 VCR UNIT(VL-E66S/H)
DUNTK2646QA01 VCR UNIT(VL-E78E)

INTEGRATED CIRCUITS

⚠	CP901	VHiCCP2E63/-1	J	I.C.	AD
	IC401	VHiAN2493F/-1	J	I.C.	AW
	IC601	VHiLA7458W/-1	J	LA7458W	AT
	IC701	VHiRM3329B/-1	J	RS5RM3329B-T2	AL
	IC702	VHiXL93L46F-1	J	XLJ93LC46F	AG
	IC703	RH-iX0514TAZZ	J	I.C.	AX
	IC704	VHiNJM2904M-1	J	NJM2904M	AE
	IC800	VHiiR3Y29AM-1	J	IR3Y29AM	AV
	IC801	VHiNJM2107F-1	J	NJM2107F	AE
	IC802	VHiNJM4565V-1	J	NJM4565V	AF
	IC803	VHiLZ95NA1/-1	J	LZ95NA1	AR
	IC901	RH-iX0325TAZZ	J	MB4484PFV-G	AY
	IC902	VHiTA75S01F-1	J	TA75S01F	AD
	IC903	VHiPST597KN-1	J	I.C.	AF
	IC1701	VHiCXA1814N-1	J	CXA1814N/-T4	AQ
	IC2701	VHiMB88344F-1	J	MB88344PFV	AV
	IC3701	VHiLB1950V/-1	J	LB1950V-TRM	AQ
	IC3702	VHiLB1951V/-1	J	LB1951V-TRM	AN
	IC3703	VHiLB1638M/-1	J	LB1638M-TE-R	AK
	IC4401	VHiTL8855FS-1	J	I.C.	AL

TRANSISTORS

Q401	VSUN9213///-1	J	Transistor	AA
Q402	VSXP4213///-1	J	Transistor	AB
Q404	VSUMD2/////-1	J	Transistor	AC
Q405	VSUN9113///-1	J	Transistor	AA
Q406	VS2SA1774F/-1	J	Transistor	AA
Q407	VS2SC4617B/-1	J	Transistor	AA
Q409	VSUN9213///-1	J	Transistor	AA
Q411	VS2SC4617B/-1	J	Transistor	AA
Q412	VSUN9113///-1	J	Transistor	AA
Q601	VS2SA1298Y/-1	J	Transistor	AB
Q602	VSDTC144EE/-1	J	Transistor	AA
Q603	VS2SC4738Y/-1	J	Transistor	AA
Q701	VS2SB12956/-1	J	Transistor	AB
Q702	VSDTC144EE/-1	J	Transistor	AA
Q703	VSXP6501///-1	J	Transistor	AB
Q704	VSUMD2/////-1	J	Transistor	AC
Q705	VSDTC144EE/-1	J	Transistor	AA
Q706	VSDTC144EE/-1	J	Transistor	AA
Q707	VSDTC144EE/-1	J	Transistor	AA
Q803	VSUPUMZ1///-1	J	Transistor	AC
Q804	VSUMG2/////-1	J	Transistor	AC
Q901	VS2SK2316//-1	J	Transistor	AE
Q902	VSUPUMZ1///-1	J	Transistor	AC

Ref. No.	Part No.	★	Description	Code
Q903	VSUMA4/////-1	J	Transistor	AB
Q904	VS2SA1973//-1	J	Transistor	AD
Q905	VS2SA1973//-1	J	Transistor	AD
Q906	VS2SA1973//-1	J	Transistor	AD
Q907	VS2SA1973//-1	J	Transistor	AD
Q908	VSFP301////-1	J	Transistor	AD
Q909	VSMPL1/////-1	J	Transistor	AE
Q910	VS2SB1123//-1	J	Transistor	AC
Q911	VSUMD2/////-1	J	Transistor	AC
Q912	VSUMD2/////-1	J	Transistor	AC
Q913	VSUMD2/////-1	J	Transistor	AC
Q914	VSFX803////-1	J	Transistor	AG
Q915	VSUMD2/////-1	J	Transistor	AC
Q916	VSMPL1/////-1	J	Transistor	AE
Q917	VSMPL1/////-1	J	Transistor	AE
Q918	VSFX803////-1	J	Transistor	AG
Q919	VS2SA1774F/-1	J	Transistor	AA
Q920	VS2SB12956/-1	J	Transistor	AB
Q921	VS2SC2412K/-1	J	Transistor	AA
Q1402	VS2SA1774F/-1	J	Transistor	AA
Q1403	VS2SC4617B/-1	J	Transistor	AA
Q1404	VSXP1B301//-1	J	Transistor	AD
Q3701	VSUMX2/////-1	J	Transistor	AB
Q3702	VSUMB2/////-1	J	Transistor	AB
Q4401	VS2SA1774F/-1	J	Transistor	AA
Q4402	VS2SA1774F/-1	J	Transistor	AA
Q4404	VS2SC4617B/-1	J	Transistor	AA
Q4405	VS2SA1774F/-1	J	Transistor	AA
Q4406	VS2SA1774F/-1	J	Transistor	AA
Q5401	VS2SC4617B/-1	J	Transistor	AA
Q5402	VS2SC3931C/-1	J	Transistor	AB
Q5403	VS2SC4617B/-1	J	Transistor	AA
Q5404	VS2SC4617B/-1	J	Transistor	AA
Q5405	VS2SA1298Y/-1	J	Transistor	AB
Q5451	VSUPUMZ1///-1	J	Transistor	AC
Q6402	VS2SC4617B/-1	J	Transistor	AA
Q6403	VS2SC4617B/-1	J	Transistor	AA
Q7402	VS2SA1774F/-1	J	Transistor	AA
Q7403	VS2SC4617B/-1	J	Transistor	AA
Q7404	VS2SA1774F/-1	J	Transistor	AA
Q7405	VSUN9113///-1	J	Transistor	AA
Q8402	VSXP6501///-1	J	Transistor	AB
Q8403	VSUN9213///-1	J	Transistor	AA
Q8404	VSUPUMZ1///-1	J	Transistor	AC
Q8405	VSXP6501///-1	J	Transistor	AB
Q8406	VSDTC123EE/-1	J	Transistor	AC
Q8407	VS2SC4617B/-1	J	Transistor	AA
Q8408	VS2SC4617B/-1	J	Transistor	AA
Q8409	VS2SA1774F/-1	J	Transistor	AA
Q9401	VSXP6501///-1	J	Transistor	AB

DIODES AND LED'S

D401	VHDMA133///-1	J	Diode	AB
D601	VHDMA132K//-1	J	Diode	AA
D701	RH-DX0182TAZZ	J	Diode	AD
D800	VHDMA132K//-1	J	Diode	AA
D801	VHDHVU17TRF-1	J	Diode	AE
D802	VHDMA132K//-1	J	Diode	AA
D803	VHDHVU359TR-1	J	Diode	AE
D804	VHDHVU359TR-1	J	Diode	AE
D805	RH-EX0189TAZZ	J	Zener Diode	AC
D901	VHDMA2S111/-1	J	Diode	AC
D902	VHDSB20W03P-1	J	Diode	AE
D903	VHDMA6S121/-1	J	Diode	AD
D904	VHDF01J2E//-1	J	Diode	AC
D905	VHDMA2S111/-1	J	Diode	AC
D906	VHDMA2S111/-1	J	Diode	AC
D5401	VHDHVU17TRF-1	J	Diode	AE

PACKAGED CIRCUITS

TH800	VHHT1103K44-1	J	Thermistor	AD
TH5401	VHHT1222K41-1	J	Thermistor	AD
X401	RCRSC0114TAZZ	J	Crystal	AH
X701	RCRSC0033TAZZ	J	Crystal	AG
X800	RCRSC0096TAZZ	J	Crystal	AL

COIL AND TRANSFORMERS

FL5401	RCILF0320TAZZ	J	Coil			AK
FL5451	RCILF0346TAZZ	J	Coil			AG
FL6401	RCILF0345TAZZ	J	Coil			AG
L401	VPAXM220KR88N	J	Peaking	22µH	10%	AC
L402	VPAWM101J140N	J	Peaking	100µH	5%	AC
L403	VPAEM820J7R7N	J	Peaking	82µH	5%	AC
L404	VPAEM470J5R4N	J	Peaking	47µH	5%	AC
L601	VPAXM101K4R0N	J	Peaking	100µH	10%	AC
L602	VPAXM101K4R0N	J	Peaking	100µH	10%	AC
L603	VP-WM220KR71N	J	Peaking	22µH	10%	AB
L701	RCILP0241TAZZ	J	Coil			AF
L702	VPAXM220KR88N	J	Peaking	22µH	10%	AC
L800	VPAEM560J6R2N	J	Peaking	56µH	5%	AD
L801	VPAEM680J6R9N	J	Peaking	68µH	5%	AC
L802	VPAXM470K1R7N	J	Peaking	47µH	10%	AC
L803	VPAXM100KR42N	J	Peaking	10µH	10%	AC
L804	VPAEM1R2KR38N	J	Peaking	1.2µH	10%	AD
L805	VPAEM220J2R9N	J	Peaking	22µH	5%	AC
L806	VPAEM100J1R3N	J	Peaking	10µH	5%	AC

Ref. No.	Part No.	★	Description	Code
L901	RCiLP0160TAZZ	J	Coil	AE
L902	RCiLP0206TAZZ	J	Coil	AE
L903	VPAXM101K4R0N	J	Peaking 100µH 10%	AC
L904	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L905	VPAXM2R2MR16NJ		Peaking 2.2µH 20%	AC
L906	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L907	VPAXM2R2MR16NJ		Peaking 2.2µH 20%	AC
L908	RCiLP0226TAZZ	J	Coil	AE
L909	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L910	RCiLP0160TAZZ	J	Coil	AE
L911	RCiLP0206TAZZ	J	Coil	AE
L912	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L913	RCiLP0226TAZZ	J	Coil	AE
L914	RCiLP0160TAZZ	J	Coil	AE
L915	VPBAM100KR26N	J	Peaking 10µH 10%	AC
L916	VPBAM100KR26N	J	Peaking 10µH 10%	AC
L917	VPBAM100KR26N	J	Peaking 10µH 10%	AC
L918	VPBAM2R2M090N	J	Peaking 2.2µH 20%	AC
L919	VPBAM100KR26N	J	Peaking 10µH 10%	AC
L920	RCiLP0206TAZZ	J	Coil	AE
L921	VPAXM2R2MR16NJ		Peaking 2.2µH 20%	AC
L922	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L923	RCiLP0160TAZZ	J	Coil	AE
L924	RCiLP0205TAZZ	J	Coil	AE
L925	RCiLP0205TAZZ	J	Coil	AE
L926	RCiLP0206TAZZ	J	Coil	AE
L927	RCiLP0223TAZZ	J	Coil	AE
L928	RCiLP0226TAZZ	J	Coil	AE
L929	VPAXM101K4R0N	J	Peaking 100µH 10%	AC
L930	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L1701	VPAXM220KR88N	J	Peaking 22µH 10%	AC
L2701	VPAXM220KR88N	J	Peaking 22µH 10%	AC
L3701	VPAXM2R2MR16NJ		Peaking 2.2µH 20%	AC
L4401	VPAXM470K1R7N	J	Peaking 47µH 10%	AC
L7402	VPAEM121J9R0N	J	Peaking 120µH 5%	AC
L7403	VPAEM391J220N	J	Peaking 390µH 5%	AC
L7404	VPAWM1R8JR98NJ		Peaking 1.8µH 5%	AC
L7405	VPAEM471J250N	J	Peaking 470µH 5%	AC
L8401	VPAWM6R8J2R1NJ		Peaking 6.8µH 5%	AC
L8402	VPAWM100J2R6N	J	Peaking 10µH 5%	AC
L8403	VPAWM8R2J2R3NJ		Peaking 8.2µH 5%	AD
L8404	VPAEM121J9R0N	J	Peaking 120µH 5%	AC
L8405	VPAEM471J250N	J	Peaking 470µH 5%	AC
L8407	VPAEM331J210N	J	Peaking 330µH 5%	AC
L8408	VPAEM471J250N	J	Peaking 470µH 5%	AC
⚠ T901	RTRNZ0099TAZZ	J	Transformer	AH
⚠ T902	RTRNZ0109TAZZ	J	Transformer	AH

Ref. No.	Part No.	★	Description	Code
			CAPACITORS	
C402	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C403	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C404	RC-KZ0051TAZZ	J	Capacitor	AC
C405	VCEAPJ0JW106M	J	10 6.3V Electrolytic	AD
C406	VCEAPE1EW335MJ		3.3 25V Electrolytic	AB
C407	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C408	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C409	VCEAPE1CW475MJ		4.7 16V Electrolytic	AB
C410	RC-KZ0051TAZZ	J	Capacitor	AC
C411	RC-KZ0051TAZZ	J	Capacitor	AC
C412	VCEAPE1EW335MJ		3.3 25V Electrolytic	AB
C413	VCEAPE1EW335MJ		3.3 25V Electrolytic	AB
C414	VCKYTV1CB224K	J	0.22 16V Ceramic	AB
C415	VCEAPJ0JW106M	J	10 6.3V Electrolytic	AD
C416	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C417	VCSATA1AJ106M	J	10 10V Tantalum	AC
C418	VCEAPE1EW335MJ		3.3 25V Electrolytic	AB
C419	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C420	VCCCCY1HH151J	J	150p 50V Ceramic	AA
C421	RC-KZ0051TAZZ	J	Capacitor	AC
C423	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C424	VCCCCY1HH331J	J	330p 50V Ceramic	AA
C425	VCCCCY1HH391J	J	390p 50V Ceramic	AA
C426	VCCCCY1HH270J	J	27p 50V Ceramic	AA
C427	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C428	VCSATA1AJ106M	J	10 10V Tantalum	AC
C429	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C430	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C431	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C432	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C433	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C435	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C436	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C437	VCCCCY1EH681J	J	680p 25V Ceramic	AB
C438	VCE9PE0JW335M	J	3.3 6.3V Electrolytic	AE
C439	VCCCCY1HH561J	J	560p 50V Ceramic	AB
C440	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C441	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C442	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C443	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C445	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C446	RC-KZ0051TAZZ	J	Capacitor	AC
C447	VCEAPJ0JW106M	J	10 6.3V Electrolytic	AD
C448	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C449	VCSATC1AJ476M	J	47 10V Tantalum	AE
C451	VCSATA1AJ106M	J	10 10V Tantalum	AC
C453	VCCCCY1HH270J	J	27p 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
C454	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C455	VCKYTV1CB474K	J	0.47 16V Ceramic	AC
C457	RC-KZ0051TAZZ	J	Capacitor	AC
C458	VCCCCY1HH271J	J	270p 50V Ceramic	AA
C459	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C601	VCEAPH1HW225MJ		2.2 50V Electrolytic	AB
C602	VCKYTV1CF225Z	J	2.2 16V Ceramic	AC
C603	VCEAPF0JW476M	J	47 6.3V Electrolytic	AB
C604	VCEAPF0JW476M	J	47 6.3V Electrolytic	AB
C605	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C606	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C607	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C608	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C609	VCKYCY1CF334Z	J	0.33 16V Ceramic	AA
C610	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C611	VCEAPH0JW226M	J	22 6.3V Electrolytic	AB
C612	VCEAPH1HW474MJ		0.47 50V Electrolytic	AB
C613	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C614	VCKYTV1HB223K	J	0.022 50V Ceramic	AB
C615	VCEAPH1HW105MJ		1.0 50V Electrolytic	AB
C616	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C617	VCEAPF1AW336MJ		33 10V Electrolytic	AC
C618	RC-KZ0051TAZZ	J	Capacitor	AC
C619	VCEAPH1EW475MJ		4.7 25V Electrolytic	AB
C620	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C621	VCEAPH1EW475MJ		4.7 25V Electrolytic	AB
C622	VCEAPH1HW474MJ		0.47 50V Electrolytic	AB
C623	VCEAPH1CW106MJ		10 16V Electrolytic	AB
C624	VCEAPF0JW476M	J	47 6.3V Electrolytic	AB
C625	VCEAPH1EW475MJ		4.7 25V Electrolytic	AB
C626	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C627	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C628	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C629	VCKYCY1HB332K	J	3300p 50V Ceramic	AA
C630	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C631	VCEAPH1HW105MJ		1.0 50V Electrolytic	AB
C632	VCKYCY1HB222K	J	2200p 50V Ceramic	AA
C633	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C634	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C635	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C636	VCEAPH1HW105MJ		1.0 50V Electrolytic	AB
C637	VCEAPF0JW476M	J	47 6.3V Electrolytic	AB
C701	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C702	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C703	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C704	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C705	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C706	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C707	VCEAPF1AW476MJ		47 10V Electrolytic	AB
C708	VCSATC1CJ226M	J	22 16V Tantalum	AF
C709	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C710	VCEAPF0JW107M	J	100 6.3V Electrolytic	AC
C711	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C712	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C713	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C714	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C715	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C716	VCCCCY1HH180J	J	18p 50V Ceramic	AA
C717	VCKYCY1HB471K	J	470p 50V Ceramic	AA
C718	VCCCCY1HH180J	J	18p 50V Ceramic	AA
C719	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C720	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C721	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C722	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C723	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C724	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C725	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C726	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C727	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C728	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C729	VCKYCY1AF105Z	J	1.0 10V Ceramic	AC
C801	VCCCCY1HH471J	J	470p 50V Ceramic	AA
C803	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC
C804	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C805	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C806	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C807	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C808	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C809	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C810	RC-KZ0060TAZZ	J	Capacitor	AB
C811	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C813	RC-KZ0060TAZZ	J	Capacitor	AB
C815	RC-KZ0060TAZZ	J	Capacitor	AB
C818	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C819	VCCCCY1HH6R0DJ		6.0p 50V Ceramic	AA
C820	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C821	RC-KZ0060TAZZ	J	Capacitor	AB
C822	VCKYTV1CB474K	J	0.47 16V Ceramic	AC
C823	VCEAPE1EW335MJ		3.3 25V Electrolytic	AB
C824	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C825	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C826	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C827	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C829	VCCCCY1HH390J	J	39p 50V Ceramic	AA
C830	VCEAPJ1CW226MJ		22 16V Electrolytic	AD
C831	VCEAPJ0JW106M	J	10 6.3V Electrolytic	AD

Ref. No.	Part No.	★	Description	Code
C832	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C833	VCCCCY1HH390J	J	39p 50V Ceramic	AA
C834	VCKYCY1HB681K	J	680p 50V Ceramic	AA
C837	VCCCCY1HH8R0DJ		8.0p 50V Ceramic	AA
C838	VCCCCY1HH150J	J	15p 50V Ceramic	AA
C839	VCKYCY1CF334Z	J	0.33 16V Ceramic	AA
C840	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C841	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C842	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C843	VCSATE1AJ336M	J	33 10V Tantalum	AG
C847	VCKYCY1HB561K	J	560p 50V Ceramic	AA
C848	VCEAPE1HW105MJ		1.0 50V Electrolytic	AB
C849	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C850	VCCCCY1HH8R0DJ		8.0p 50V Ceramic	AA
C851	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C852	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC
C853	VCSATE1AJ336M	J	33 10V Tantalum	AG
C854	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C855	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C856	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C857	RC-KZ0060TAZZ	J	Capacitor	AB
C858	VCCCCY1HH220J	J	22p 50V Ceramic	AA
C859	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C860	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C861	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C863	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C864	VCKYCY1CF224Z	J	0.22 16V Ceramic	AA
C866	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C872	VCCCCY1HH820J	J	82p 50V Ceramic	AA
C873	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C874	VCSATE1DJ475M	J	4.7 20V Tantalum	AD
C876	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C877	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C878	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C879	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C880	RC-KZ0051TAZZ	J	Capacitor	AC
C881	RC-KZ0051TAZZ	J	Capacitor	AC
C883	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C890	VCSATC1CJ226M	J	22 16V Tantalum	AF
C900	VCEAPF1AW476MJ		47 10V Electrolytic	AB
C901	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C906	RC-KZ0049TAZZ	J	Capacitor	AD
C907	RC-KZ0042TAZZ	J	Capacitor	AE
C908	RC-KZ0037TAZZ	J	Capacitor	AD
C909	RC-KZ0037TAZZ	J	Capacitor	AD
C910	RC-KZ0027TAZZ	J	Capacitor	AF
C912	RC-KZ0042TAZZ	J	Capacitor	AE
C914	RC-KZ0037TAZZ	J	Capacitor	AD
C915	RC-KZ0037TAZZ	J	Capacitor	AD
C916	RC-KZ0037TAZZ	J	Capacitor	AD
C917	RC-KZ0037TAZZ	J	Capacitor	AD
C918	RC-KZ0037TAZZ	J	Capacitor	AD
C919	RC-KZ0037TAZZ	J	Capacitor	AD
C921	RC-KZ0058TAZZ	J	Capacitor	AC
C922	RC-KZ0058TAZZ	J	Capacitor	AC
C923	RC-KZ0048TAZZ	J	Capacitor	AD
C924	RC-KZ0048TAZZ	J	Capacitor	AD
C925	RC-KZ0058TAZZ	J	Capacitor	AC
C926	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C927	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C928	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB
C929	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC
C930	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C931	RC-KZ0042TAZZ	J	Capacitor	AE
C932	RC-KZ0042TAZZ	J	Capacitor	AE
C933	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB
C934	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB
C935	RC-KZ0042TAZZ	J	Capacitor	AE
C936	RC-KZ0049TAZZ	J	Capacitor	AD
C937	RC-KZ0042TAZZ	J	Capacitor	AE
C938	RC-KZ0049TAZZ	J	Capacitor	AD
C939	RC-KZ0049TAZZ	J	Capacitor	AD
C940	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C941	VCKYCY1EF104Z	J	0.1 25V Ceramic	AA
C942	VCEAPT1EN226M	J	22 25V Electrolytic	AD
C944	RC-KZ0049TAZZ	J	Capacitor	AD
C945	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB
C946	VCKYTV1AB105K	J	1.0 10V Ceramic	AD
C1402	RC-KZ0051TAZZ	J	Capacitor	AC
C1403	RC-KZ0042TAZZ	J	Capacitor	AE
C1404	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1405	VCSATA1AJ106M	J	10 10V Tantalum	AC
C1701	VCSATE1AJ336M	J	33 10V Tantalum	AG
C1702	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1703	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1704	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C1705	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1706	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1707	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1708	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C1709	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C1710	VCCCCY1HH8R0DJ		8.0p 50V Ceramic	AA
C1711	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
C1901	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1902	VCKYCY1HB332K	J	3300p 50V Ceramic	AA
C1903	VCKYCY1CB104K	J	0.1 16V Ceramic	AB

Ref. No.	Part No.	★	Description	Code
C1904	VCKYCY1HB222K	J	2200p 50V Ceramic	AA
C1906	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C1907	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C1908	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C1909	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C1910	VCCCCY1HH181J	J	180p 50V Ceramic	AA
C1911	VCCCCY1HH181J	J	180p 50V Ceramic	AA
C1912	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1913	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1914	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1915	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1916	VCKYCY1CB333K	J	0.033 16V Ceramic	AA
C1917	VCKYTV1CF225Z	J	2.2 16V Ceramic	AC
C1918	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C1919	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1920	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C1921	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C1922	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1923	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C1924	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1925	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C1926	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1927	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C1928	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C1930	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C1931	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C2701	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C2702	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C2703	VCSATA1AJ475M	J	4.7 10V Tantalum	AC
C3701	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3702	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3703	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3704	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C3705	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C3706	VCKYCY1EB103K	J	0.01 25V Ceramic	AA
C3707	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C3708	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3709	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C3710	VCKYCY1CB473K	J	0.047 16V Ceramic	AA
C3711	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
C3712	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB
C3713	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C3714	VCKYCY1HB682K	J	6800p 50V Ceramic	AA
C3715	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3716	VCEAPH1CW106MJ		10 16V Electrolytic	AB
C3717	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3718	VCEAPH1CW106MJ		10 16V Electrolytic	AB
C3719	VCKYCY1CF154Z	J	0.15 16V Ceramic	AB

Ref. No.	Part No.	★	Description	Code
C3720	VCKYCY1CF154Z	J	0.15 16V Ceramic	AB
C3721	VCKYCY1CF154Z	J	0.15 16V Ceramic	AB
C3722	VCKYTV1CF105Z	J	1.0 16V Ceramic	AB
C3723	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3724	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C3725	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C4402	VCSATA1AJ106M	J	10 10V Tantalum	AC
C4403	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C4404	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C4405	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
C4406	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C4408	VCKYTV1EB104K	J	0.1 25V Ceramic	AB
C4409	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C4410	RC-KZ0051TAZZ	J	Capacitor	AC
C4411	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C4412	VCSATA1AJ106M	J	10 10V Tantalum	AC
C4413	VCSATA1AJ106M	J	10 10V Tantalum	AC
C4453	VCCCCY1HH680J	J	68p 50V Ceramic	AA
C5401	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C5402	VCCCCY1HH471J	J	470p 50V Ceramic	AA
C5403	VCCCCY1HH820J	J	82p 50V Ceramic	AA
C5405	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C5406	RC-KZ0051TAZZ	J	Capacitor	AC
C5452	VCCCCY1HH820J	J	82p 50V Ceramic	AA
C6401	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6403	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6404	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6405	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C6406	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C7401	VCCCCY1HH561J	J	560p 50V Ceramic	AB
C7404	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C7405	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C7406	VCCCCY1HH121J	J	120p 50V Ceramic	AA
C7407	VCCCCY1HH101J	J	100p 50V Ceramic	AA
C7409	VCCCCY1HH100D	J	10p 50V Ceramic	AA
C7410	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C8401	VCCCCY1HH820J	J	82p 50V Ceramic	AA
C8402	VCCCCY1HH560J	J	56p 50V Ceramic	AA
C8403	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C8404	VCCCCY1HH150J	J	15p 50V Ceramic	AA
C8405	VCCCCY1HH390J	J	39p 50V Ceramic	AA
C8406	VCCCCY1HH271J	J	270p 50V Ceramic	AA
C8407	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C8408	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C8411	VCKYCY1CB104K	J	0.1 16V Ceramic	AB
C8412	VCKYCY1HB222K	J	2200p 50V Ceramic	AA
C8413	VCCCCY1HH330J	J	33p 50V Ceramic	AA
C8414	VCKYCY1HB222K	J	2200p 50V Ceramic	AA

Ref. No.	Part No.	★	Description	Code
C8415	VCKYCY1HB222K	J	2200p 50V Ceramic	AA
C8416	RC-KZ0051TAZZ	J	Capacitor	AC
C9401	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C9402	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C9403	VCCCCY1HH100D	J	10p 50V Ceramic	AA
C9404	VCCCCY1HH100D	J	10p 50V Ceramic	AA

RESISTORS

R401	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R403	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R405	VRS-CY1JF102F	J	1.0k	1/16W	Metal Oxide	AA
R406	VRS-CY1JF621F	J	620	1/16W	Metal Oxide	AA
R407	VRS-CY1JF751F	J	750	1/16W	Metal Oxide	AA
R408	VRS-CZ1JF823J	J	82k	1/16W	Metal Oxide	AA
R409	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R412	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R413	VRS-CZ1JF684J	J	680k	1/16W	Metal Oxide	AA
R416	VRS-CZ1JF474J	J	470k	1/16W	Metal Oxide	AA
R420	VRS-CY1JF471F	J	470	1/16W	Metal Oxide	AA
R421	VRS-CZ1JF681J	J	680	1/16W	Metal Oxide	AA
R423	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R424	VRS-CZ1JF302J	J	3.0k	1/16W	Metal Oxide	AB
R425	VRS-CY1JF122F	J	1.2k	1/16W	Metal Oxide	AA
R426	VRS-CY1JF181F	J	180	1/16W	Metal Oxide	AA
R428	VRS-CY1JF122F	J	1.2k	1/16W	Metal Oxide	AA
R430	VRS-CY1JF911F	J	910	1/16W	Metal Oxide	AA
R431	VRS-CY1JF910F	J	91	1/16W	Metal Oxide	AA
R434	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R435	VRS-CY1JF000J	J	00	1/16W	Metal Oxide	AA
R436	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R437	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R438	VRS-CY1JF822F	J	8.2k	1/16W	Metal Oxide	AA
R440	VRS-CY1JF152F	J	1.5k	1/16W	Metal Oxide	AA
R442	VRS-CY1JF223F	J	22k	1/16W	Metal Oxide	AA
R443	VRS-CY1JF152F	J	1.5k	1/16W	Metal Oxide	AA
R444	VRS-CY1JF331F	J	330	1/16W	Metal Oxide	AA
R445	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R446	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R602	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R603	VRS-CZ1JF154J	J	150k	1/16W	Metal Oxide	AA
R604	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R605	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R606	VRS-CZ1JF334J	J	330k	1/16W	Metal Oxide	AA
R607	VRS-CZ1JF334J	J	330k	1/16W	Metal Oxide	AA
R608	VRS-CZ1JF563J	J	56k	1/16W	Metal Oxide	AA
R609	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R611	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R612	VRS-CZ1JF681J	J	680	1/16W	Metal Oxide	AA
R614	VRS-CZ1JF122J	J	1.2k	1/16W	Metal Oxide	AA
R615	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R616	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA
R617	VRS-CZ1JF335J	J	3.3M	1/16W	Metal Oxide	AA
R618	VRS-CZ1JF154J	J	150k	1/16W	Metal Oxide	AA
R619	VRS-CZ1JF274J	J	270k	1/16W	Metal Oxide	AA
R624	VRS-CZ1JF182J	J	1.8k	1/16W	Metal Oxide	AA
R625	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R626	VRS-CZ1JF122J	J	1.2k	1/16W	Metal Oxide	AA
R627	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R628	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R629	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R632	VRS-CZ1JF822J	J	8.2k	1/16W	Metal Oxide	AA
R633	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R701	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R702	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R703	VRS-CZ1JF272J	J	2.7k	1/16W	Metal Oxide	AA
R704	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R705	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R706	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R707	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R708	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R709	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R710	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R711	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R712	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R713	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R714	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R715	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R716	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R717	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R718	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R719	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R720	VRS-CZ1JF154J	J	150k	1/16W	Metal Oxide	AA
R721	VRS-CZ1JF334J	J	330k	1/16W	Metal Oxide	AA
R722	VRS-CZ1JF183J	J	18k	1/16W	Metal Oxide	AA
R723	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R724	VRS-CZ1JF563D	J	56k	1/16W	Metal Oxide	AA
R725	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R726	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R727	VRS-CZ1JF334J	J	330k	1/16W	Metal Oxide	AA
R728	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R729	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R730	VRS-CZ1JF154J	J	150k	1/16W	Metal Oxide	AA
R731	VRS-CZ1JF823J	J	82k	1/16W	Metal Oxide	AA
R732	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA
R733	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R737	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R738	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R739	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R740	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R741	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R742	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R743	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R744	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R745	VRS-CZ1JF154J	J	150k 1/16W Metal Oxide	AA
R746	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R747	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R748	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R749	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R753	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R754	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R755	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R756	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R757	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R758	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R759	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R760	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide	AA
R761	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R762	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide	AA
R763	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R764	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R765	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide	AA
R766	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R767	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R768	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R769	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R770	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R771	VRS-CZ1JF224J	J	220k 1/16W Metal Oxide	AA
R772	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R773	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R800	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R801	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide	AA
R802	VRS-CZ1JF823J	J	82k 1/16W Metal Oxide	AA
R805	VRS-CY1JF334F	J	330k 1/16W Metal Oxide	AA
R809	VRS-CY1JF363F	J	36k 1/16W Metal Oxide	AA
R810	VRS-CY1JF563F	J	56k 1/16W Metal Oxide	AA
R811	VRS-CY1JF473F	J	47k 1/16W Metal Oxide	AA
R812	VRS-CY1JF393F	J	39k 1/16W Metal Oxide	AA
R815	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R816	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R817	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R818	VRS-CY1JF363F	J	36k 1/16W Metal Oxide	AA
R819	VRS-CY1JF203F	J	20k 1/16W Metal Oxide	AA
R820	VRS-CY1JF333F	J	33k 1/16W Metal Oxide	AA
R821	VRS-CY1JF273F	J	27k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R825	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R826	VRS-CY1JF124F	J	120k 1/16W Metal Oxide	AA
R828	VRS-CY1JF223F	J	22k 1/16W Metal Oxide	AA
R829	VRS-CY1JF163F	J	16k 1/16W Metal Oxide	AA
R830	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R831	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R832	VRS-CY1JF122F	J	1.2k 1/16W Metal Oxide	AA
R833	VRS-CY1JF183F	J	18k 1/16W Metal Oxide	AA
R834	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide	AA
R835	VRS-CZ1JF272J	J	2.7k 1/16W Metal Oxide	AA
R836	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide	AA
R837	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R838	VRS-CZ1JF334J	J	330k 1/16W Metal Oxide	AA
R839	VRS-CZ1JF334J	J	330k 1/16W Metal Oxide	AA
R840	VRS-CY1JF562F	J	5.6k 1/16W Metal Oxide	AA
R841	VRS-CY1JF393F	J	39k 1/16W Metal Oxide	AA
R842	VRS-CY1JF393F	J	39k 1/16W Metal Oxide	AA
R843	VRS-CY1JF223F	J	22k 1/16W Metal Oxide	AA
R844	VRS-CY1JF106J	J	10M 1/16W Metal Oxide	AA
R845	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R847	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R849	VRS-CY1JF274J	J	270k 1/16W Metal Oxide	AA
R851	VRS-CY1JF333F	J	33k 1/16W Metal Oxide	AA
R853	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R854	VRS-CZ1JF563J	J	56k 1/16W Metal Oxide	AA
R855	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R858	VRS-CY1JF393F	J	39k 1/16W Metal Oxide	AA
R859	VRS-CY1JF104F	J	100k 1/16W Metal Oxide	AA
R861	VRS-CY1JF273J	J	27k 1/16W Metal Oxide	AA
R862	VRS-CZ1JF563J	J	56k 1/16W Metal Oxide	AA
R865	VRS-CY1JF103F	J	10k 1/16W Metal Oxide	AA
R866	VRS-CZ1JF393J	J	39k 1/16W Metal Oxide	AA
R867	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R868	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide	AA
R869	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide	AA
R870	VRS-CZ1JF472J	J	4.7k 1/16W Metal Oxide	AA
R871	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide	AA
R872	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R873	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide	AA
R874	VRS-CY1JF473F	J	47k 1/16W Metal Oxide	AA
R875	VRS-CZ1JF564J	J	560k 1/16W Metal Oxide	AA
R876	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R877	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R878	VRS-CZ1JF104J	J	100k 1/16W Metal Oxide	AA
R879	VRS-CZ1JF564J	J	560k 1/16W Metal Oxide	AA
R880	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide	AA
R881	VRS-CZ1JF564J	J	560k 1/16W Metal Oxide	AA
R882	VRS-CZ1JF561J	J	560 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description			Code
R883	VRS-CY1JF163F	J	16k	1/16W	Metal Oxide	AA
R884	VRS-CZ1JF470J	J	47	1/16W	Metal Oxide	AA
R885	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R886	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R887	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R888	VRS-CY1JF222F	J	2.2k	1/16W	Metal Oxide	AA
R889	VRS-CY1JF562F	J	5.6k	1/16W	Metal Oxide	AA
R890	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R891	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R892	VRS-CY1JF123F	J	12k	1/16W	Metal Oxide	AA
R893	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R894	VRS-CY1JF103F	J	10k	1/16W	Metal Oxide	AA
R896	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R897	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R898	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R901	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R902	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R903	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R904	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R906	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R907	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R908	VRS-CZ1JF562J	J	5.6k	1/16W	Metal Oxide	AA
R910	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R911	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R912	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R913	VRS-CZ1JF681J	J	680	1/16W	Metal Oxide	AA
R914	VRS-CZ1JF121D	J	120	1/16W	Metal Oxide	AB
R915	VRS-CY1JFR22J	J	0.22	1/16W	Metal Oxide	AA
R920	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R1401	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R1403	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R1404	VRS-CY1JF750J	J	75	1/16W	Metal Oxide	AA
R1406	VRS-CZ1JF221J	J	220	1/16W	Metal Oxide	AA
R1407	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R1408	VRS-CZ1JF133J	J	13k	1/16W	Metal Oxide	AA
R1409	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R1410	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R1411	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R1451	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R1454	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R1701	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R1702	VRS-CZ1JF273J	J	27k	1/16W	Metal Oxide	AA
R1703	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R1704	VRS-CZ1JF683J	J	68k	1/16W	Metal Oxide	AA
R1801	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R1802	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R1803	VRS-CY1JF433F	J	43k	1/16W	Metal Oxide	AA
R1804	VRS-CZ1JF331J	J	330	1/16W	Metal Oxide	AA
R1805	VRS-CZ1JF331J	J	330	1/16W	Metal Oxide	AA
R1806	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R1807	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R1808	VRS-CZ1JF124J	J	120k	1/16W	Metal Oxide	AA
R1809	VRS-CY1JF273F	J	27k	1/16W	Metal Oxide	AA
R1810	VRS-CY1JF183F	J	18k	1/16W	Metal Oxide	AA
R1811	VRS-CZ1JF512J	J	5.1k	1/16W	Metal Oxide	AB
R1812	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R1814	VRS-CZ1JF272D	J	2.7k	1/16W	Metal Oxide	AB
R1901	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R1902	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB
R1903	VRS-CZ1JF683D	J	68k	1/16W	Metal Oxide	AB
R1904	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R1905	VRS-CZ1JF682D	J	6.8k	1/16W	Metal Oxide	AB
R1906	VRS-CZ1JF103D	J	10k	1/16W	Metal Oxide	AB
R1907	VRS-CZ1JF102D	J	1.0k	1/16W	Metal Oxide	AA
R1908	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB
R1909	VRS-CZ1JF683D	J	68k	1/16W	Metal Oxide	AB
R1910	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R1911	VRS-CZ1JF682D	J	6.8k	1/16W	Metal Oxide	AB
R1912	VRS-CZ1JF182D	J	1.8k	1/16W	Metal Oxide	AB
R1913	VRS-CZ1JF183D	J	18k	1/16W	Metal Oxide	AB
R1914	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB
R1916	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R1917	VRS-CZ1JF153D	J	15k	1/16W	Metal Oxide	AB
R1918	VRS-CZ1JF183D	J	18k	1/16W	Metal Oxide	AB
R1919	VRS-CZ1JF182D	J	1.8k	1/16W	Metal Oxide	AB
R1920	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB
R1921	VRS-CZ1JF823D	J	82k	1/16W	Metal Oxide	AB
R1922	VRS-CZ1JF331D	J	330	1/16W	Metal Oxide	AA
R1923	VRS-CZ1JF302D	J	3.0k	1/16W	Metal Oxide	AA
R1924	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R1925	VRS-CZ1JF153D	J	15k	1/16W	Metal Oxide	AB
R1926	VRS-CZ1JF103D	J	10k	1/16W	Metal Oxide	AB
R1927	VRS-CZ1JF152D	J	1.5k	1/16W	Metal Oxide	AB
R1928	VRS-CZ1JF393D	J	39k	1/16W	Metal Oxide	AB
R1929	VRS-CZ1JF562D	J	5.6k	1/16W	Metal Oxide	AB
R1930	VRS-CZ1JF183J	J	18k	1/16W	Metal Oxide	AA
R1931	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R1932	VRS-CZ1JF182J	J	1.8k	1/16W	Metal Oxide	AA
R1933	VRS-CZ1JF183J	J	18k	1/16W	Metal Oxide	AA
R1934	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA
R1935	VRS-CZ1JF123J	J	12k	1/16W	Metal Oxide	AA
R1936	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA
R1937	VRS-CZ1JF123J	J	12k	1/16W	Metal Oxide	AA
R1938	VRS-CZ1JF104D	J	100k	1/16W	Metal Oxide	AB
R1939	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R1940	VRS-CZ1JF333D	J	33k	1/16W	Metal Oxide	AB

Ref. No.	Part No.	★	Description	Code
R1941	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R1942	VRS-CZ1JF104D	J	100k 1/16W Metal Oxide	AB
R1943	VRS-CZ1JF563D	J	56k 1/16W Metal Oxide	AA
R1944	VRS-CZ1JF392D	J	3.9k 1/16W Metal Oxide	AB
R1945	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide	AB
R1946	VRS-CZ1JF272D	J	2.7k 1/16W Metal Oxide	AB
R1947	VRS-CZ1JF104D	J	100k 1/16W Metal Oxide	AB
R1948	VRS-CZ1JF183D	J	18k 1/16W Metal Oxide	AB
R1949	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R1950	VRS-CZ1JF683D	J	68k 1/16W Metal Oxide	AB
R1951	VRS-CZ1JF333D	J	33k 1/16W Metal Oxide	AB
R1952	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R1953	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide	AA
R1954	VRS-CZ1JF153J	J	15k 1/16W Metal Oxide	AA
R1955	VRS-CZ1JF333J	J	33k 1/16W Metal Oxide	AA
R1956	VRS-CZ1JF183D	J	18k 1/16W Metal Oxide	AB
R1957	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide	AB
R1958	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R1960	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R1961	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide	AA
R1962	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R1963	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R1964	VRS-CZ1JF560J	J	56 1/16W Metal Oxide	AA
R1965	VRS-CZ1JF560J	J	56 1/16W Metal Oxide	AA
R1966	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide	AA
R1967	VRS-CZ1JF272J	J	2.7k 1/16W Metal Oxide	AA
R1968	VRS-CZ1JF470J	J	47 1/16W Metal Oxide	AA
R1969	VRS-CZ1JF101J	J	100 1/16W Metal Oxide	AA
R1970	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R1971	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide	AA
R2401	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide	AA
R2402	VRS-CZ1JF183J	J	18k 1/16W Metal Oxide	AA
R2403	VRS-CZ1JF123J	J	12k 1/16W Metal Oxide	AA
R2404	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R2405	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R2406	VRS-CZ1JF563J	J	56k 1/16W Metal Oxide	AA
R2407	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide	AA
R2408	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide	AA
R2409	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R2410	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R2411	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide	AA
R2412	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide	AA
R2413	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide	AA
R2414	VRS-CZ1JF683J	J	68k 1/16W Metal Oxide	AA
R2415	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R2416	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R2417	VRS-CZ1JF153J	J	15k 1/16W Metal Oxide	AA
R2418	VRS-CZ1JF332J	J	3.3k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R2419	VRS-CZ1JF682J	J	6.8k 1/16W Metal Oxide	AA
R2420	VRS-CZ1JF822J	J	8.2k 1/16W Metal Oxide	AA
R2421	VRS-CZ1JF103J	J	10k 1/16W Metal Oxide	AA
R2422	VRS-CZ1JF562J	J	5.6k 1/16W Metal Oxide	AA
R2423	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R3701	VRS-CZ1JF822D	J	8.2k 1/16W Metal Oxide	AA
R3702	VRS-CZ1JF822D	J	8.2k 1/16W Metal Oxide	AA
R3703	VRS-CZ1JF822D	J	8.2k 1/16W Metal Oxide	AA
R3704	VRS-CY1JF1R0J	J	1.0 1/16W Metal Oxide	AA
R3705	VRS-CY1JF1R0J	J	1.0 1/16W Metal Oxide	AA
R3706	VRS-CZ1JF105J	J	1.0M 1/16W Metal Oxide	AA
R3707	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R3708	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R3709	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R3710	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide	AA
R3711	VRS-CZ1JF473J	J	47k 1/16W Metal Oxide	AA
R3712	VRS-CZ1JF220J	J	22 1/16W Metal Oxide	AA
R3713	VRS-CZ1JF220J	J	22 1/16W Metal Oxide	AA
R3714	VRS-CZ1JF103D	J	10k 1/16W Metal Oxide	AB
R3715	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R3716	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R3717	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R3718	VRS-CZ1JF000J	J	00 1/16W Metal Oxide	AA
R4402	VRS-CZ1JF681J	J	680 1/16W Metal Oxide	AA
R4403	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide	AA
R4407	VRS-CZ1JF821J	J	820 1/16W Metal Oxide	AA
R4409	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R4410	VRS-CZ1JF273J	J	27k 1/16W Metal Oxide	AA
R4412	VRS-CZ1JF152J	J	1.5k 1/16W Metal Oxide	AA
R4414	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R4415	VRS-CZ1JF243J	J	24k 1/16W Metal Oxide	AA
R4416	VRS-CZ1JF821J	J	820 1/16W Metal Oxide	AA
R4417	VRS-CZ1JF102J	J	1.0k 1/16W Metal Oxide	AA
R4419	VRS-CZ1JF561J	J	560 1/16W Metal Oxide	AA
R4420	VRS-CZ1JF561J	J	560 1/16W Metal Oxide	AA
R5402	VRS-CZ1JF242J	J	2.4k 1/16W Metal Oxide	AA
R5403	VRS-CZ1JF202J	J	2.0k 1/16W Metal Oxide	AA
R5404	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide	AA
R5405	VRS-CZ1JF122J	J	1.2k 1/16W Metal Oxide	AA
R5406	VRS-CY1JF000J	J	00 1/16W Metal Oxide	AA
R5407	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R5408	VRS-CY1JF911J	J	910 1/16W Metal Oxide	AA
R5409	VRS-CZ1JF223J	J	22k 1/16W Metal Oxide	AA
R5410	VRS-CY1JF821J	J	820 1/16W Metal Oxide	AA
R5412	VRS-CZ1JF821J	J	820 1/16W Metal Oxide	AA
R5413	VRS-CZ1JF431J	J	430 1/16W Metal Oxide	AA
R5414	VRS-CZ1JF182J	J	1.8k 1/16W Metal Oxide	AA
R5415	VRS-CZ1JF222J	J	2.2k 1/16W Metal Oxide	AA

Ref. No.	Part No.	★	Description			Code
R5416	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R5417	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R5451	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R5452	VRS-CZ1JF242J	J	2.4k	1/16W	Metal Oxide	AA
R5453	VRS-CZ1JF202J	J	2.0k	1/16W	Metal Oxide	AA
R5454	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R5455	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R5456	VRS-CZ1JF911J	J	910	1/16W	Metal Oxide	AA
R5457	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R5458	VRS-CZ1JF101J	J	100	1/16W	Metal Oxide	AA
R6401	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R6402	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R6404	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R6405	VRS-CZ1JF122J	J	1.2k	1/16W	Metal Oxide	AA
R6406	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R6407	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R6408	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R6409	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R6410	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R7401	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R7402	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R7408	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R7409	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R7410	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R7411	VRS-CZ1JF331J	J	330	1/16W	Metal Oxide	AA
R7412	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R7413	VRS-CZ1JF181J	J	180	1/16W	Metal Oxide	AA
R7414	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R7415	VRS-CZ1JF182J	J	1.8k	1/16W	Metal Oxide	AA
R7416	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R7451	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R8402	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R8403	VRS-CZ1JF331J	J	330	1/16W	Metal Oxide	AA
R8404	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R8405	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R8406	VRS-CZ1JF221J	J	220	1/16W	Metal Oxide	AA
R8407	VRS-CZ1JF392J	J	3.9k	1/16W	Metal Oxide	AA
R8408	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R8409	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R8410	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R8411	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R8412	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R8413	VRS-CZ1JF101J	J	100	1/16W	Metal Oxide	AA
R8414	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R8415	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R8416	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R8417	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R8418	VRS-CZ1JF182J	J	1.8k	1/16W	Metal Oxide	AA
R8419	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R8420	VRS-CZ1JF122J	J	1.2k	1/16W	Metal Oxide	AA
R8422	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R8423	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R8424	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R8425	VRS-CZ1JF182J	J	1.8k	1/16W	Metal Oxide	AA
R8426	VRS-CZ1JF181J	J	180	1/16W	Metal Oxide	AA
R8427	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R8428	VRS-CZ1JF122J	J	1.2k	1/16W	Metal Oxide	AA
R8429	VRS-CZ1JF272J	J	2.7k	1/16W	Metal Oxide	AA
R8430	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R8431	VRS-CZ1JF821J	J	820	1/16W	Metal Oxide	AA
R8432	VRS-CZ1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R8451	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R9402	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R9403	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R9404	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R9405	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R9406	VRS-CZ1JF152J	J	1.5k	1/16W	Metal Oxide	AA
R9451	VRS-CZ1JF333J	J	33k	1/16W	Metal Oxide	AA
R9452	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R9910	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R9911	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R9915	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA

MISCELLANEOUS PARTS

P901	QPLGN0664TAZZ	J	Plug	AD
P902	QPLGN0364TAZZ	J	Plug	AC
P2601	QPLGN0264TAZZ	J	Plug	AC
SC804	QSOCN2490TAZZ	J	Socket	AE
SC901	QSOCN0784TAZZ	J	Socket	AE
SC902	QSOCN1986TAZZ	J	Socket	AF
SC903	QSOCN1786TAZZ	J	Socket	AE
SC4701	QSOCN1586TAZZ	J	Socket	AD
SLD	PSLDM3238TAFW	J	Shield	AC
SLD	PSLDM3239TAFW	J	Shield	AC

DUNTK2649QA00 CAMERA UNIT(VL-E66S/H)
DUNTK2649QA01 CAMERA UNIT(VL-E78E)

INTEGRATED CIRCUITS

IC11	VHiUPD16510-1	J	UPD16510GR-8JG	AR
IC12	VHiLR38519/-1	J	LR38519	AT
IC101	VHiCXA2006Q-1	J	CXA2006Q	AV
IC102	VHiCXD2310A-1	J	CXD2310AR	AV
IC201	RH-iX0323TAZZ	J	HG51D266TE	BF
IC501	RH-iX0436TAZZ	J	UPD784035GK502	AY
IC502	VHiMB8346BV-1	J	MB88346BPFV	AN

Ref. No.	Part No.	★	Description	Code
IC551	VHiMM1299XQ-1	J	MM1299XQ	AV
	TRANSISTORS			
Q11	VSUMX2/////-1	J	Transistor	AB
Q101	VS2SC4617B/-1	J	Transistor	AA
Q201	VSUMX2/////-1	J	Transistor	AB
Q202	VSUMT2/////-1	J	Transistor	AB
Q203	VS2SC4617B/-1	J	Transistor	AA
Q551	VSUMT2/////-1	J	Transistor	AB
Q552	VS2SC4617B/-1	J	Transistor	AA
	DIODES AND LED'S			
D501	VHDDA121///-1	J	Diode	AA
D502	VHDDA221///-1	J	Diode	AB
D503	VHDDA221///-1	J	Diode	AB
	PACKAGED CIRCUITS			
X11	RCRSZ0033TAZZ	J	Crystal	AR
	COIL AND TRANSFORMERS			
CF501	RFILC0067TAZZ	J	Filter	AE
L11	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L12	VPAXM470K1R7N	J	Peaking 47µH 10%	AC
L101	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L102	VPAXM470K1R7N	J	Peaking 47µH 10%	AC
L201	VPAXM100KR42N	J	Peaking 10µH 10%	AC
L202	VPAXM470K1R7N	J	Peaking 47µH 10%	AC
L203	VP-1M100J1R6N	J	Peaking 10µH 5%	AC
L204	VP-1M6R8M1R4N	J	Peaking 6.8µH 20%	AC
L205	VPABM3R9J1R6N	J	Peaking 3.9µH 5%	AD
L501	VPAXM100KR42N	J	Peaking 10µH 10%	AC
	CAPACITORS			
C11	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C12	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C13	VCKYTV1HB103K	J	0.01 50V Ceramic	AA
C14	VCSATE1DJ475M	J	4.7 20V Tantalum	AD
C15	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C16	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C17	VCSATC1VJ685M	J	6.8 35V Tantalum	AF
C18	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C19	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C20	VCSATA1AJ106M	J	10 10V Tantalum	AC
C21	RC-KZ0051TAZZ	J	Capacitor	AC
C22	RC-KZ0051TAZZ	J	Capacitor	AC
C23	VCKYCY1HB102K	J	1000p 50V Ceramic	AA
C24	VCCCCY1HH6R0DJ		6.0p 50V Ceramic	AA
C25	RC-JZ0001TAZZ	J	Capacitor	AC

Ref. No.	Part No.	★	Description	Code
C101	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC
C102	VCKYTQ1CB105K	J	1.0 16V Ceramic	AC
C103	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C104	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C105	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C106	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C107	VCKYCY1EB223K	J	0.022 25V Ceramic	AA
C108	RC-KZ0051TAZZ	J	Capacitor	AC
C110	VCSATA1AJ106M	J	10 10V Tantalum	AC
C111	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C112	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C113	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C114	VCCCCY1HH470J	J	47p 50V Ceramic	AA
C115	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C116	VCSATA0JJ156M	J	15 6.3V Tantalum	AC
C117	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C118	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C201	RC-KZ0051TAZZ	J	Capacitor	AC
C202	VCCCCY1HH100D	J	10p 50V Ceramic	AA
C203	RC-KZ0051TAZZ	J	Capacitor	AC
C204	VCCCCY1HH390J	J	39p 50V Ceramic	AA
C205	VCCCCY1HH750J	J	75p 50V Ceramic	AB
C206	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C207	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C208	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C209	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C210	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C211	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C212	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C213	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C214	RC-KZ0051TAZZ	J	Capacitor	AC
C215	RC-KZ0051TAZZ	J	Capacitor	AC
C216	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C501	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C502	VCSATA1AJ106M	J	10 10V Tantalum	AC
C503	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C504	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C505	VCKYCY1CF104Z	J	0.1 16V Ceramic	AA
C551	VCKYCY1EB183K	J	0.018 25V Ceramic	AA
C552	VCSATE1CJ156M	J	15 16V Tantalum	AD
C553	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
C554	VCKYCY1HB103K	J	0.01 50V Ceramic	AA
C556	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C557	VCKYCY1HF103Z	J	0.01 50V Ceramic	AA
C558	VCSATA1AJ106M	J	10 10V Tantalum	AC
C559	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
C560	VCKYCY1HB472K	J	4700p 50V Ceramic	AA
C561	VCKYCY1HB472K	J	4700p 50V Ceramic	AA

Ref. No.	Part No.	★	Description			Code
C562	VCKYCY1CB333K	J	0.033	16V	Ceramic	AA
C563	VCKYCY1CF224Z	J	0.22	16V	Ceramic	AA
C564	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C565	VCKYCY1HB122K	J	1200p	50V	Ceramic	AA
C566	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA
C567	VCSATA1AJ106M	J	10	10V	Tantalum	AC
C568	VCKYCY1HF103Z	J	0.01	50V	Ceramic	AA

RESISTORS

R13	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R15	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R16	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R17	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R18	VRS-CZ1JF183J	J	18k	1/16W	Metal Oxide	AA
R19	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R20	VRS-CZ1JF330J	J	33	1/16W	Metal Oxide	AA
R23	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R24	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R101	VRS-CZ1JF153D	J	15k	1/16W	Metal Oxide	AB
R102	VRS-CZ1JF244F	J	240k	1/16W	Metal Oxide	AA
R103	VRS-CZ1JF273J	J	27k	1/16W	Metal Oxide	AA
R104	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R105	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R106	VRS-CZ1JF563J	J	56k	1/16W	Metal Oxide	AA
R107	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R108	VRS-CZ1JF122J	J	1.2k	1/16W	Metal Oxide	AA
R109	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R111	VRS-CZ1JF220J	J	22	1/16W	Metal Oxide	AA
R112	VRS-CZ1JF104J	J	100k	1/16W	Metal Oxide	AA
R201	VRS-CZ1JF182J	J	1.8k	1/16W	Metal Oxide	AA
R202	VRS-CZ1JF681J	J	680	1/16W	Metal Oxide	AA
R203	VRS-CZ1JF473J	J	47k	1/16W	Metal Oxide	AA
R204	VRS-CZ1JF683J	J	68k	1/16W	Metal Oxide	AA
R205	VRS-CZ1JF273J	J	27k	1/16W	Metal Oxide	AA
R206	VRS-CZ1JF123J	J	12k	1/16W	Metal Oxide	AA
R207	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R208	VRS-CZ1JF562J	J	5.6k	1/16W	Metal Oxide	AA
R209	VRS-CZ1JF681J	J	680	1/16W	Metal Oxide	AA
R210	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R211	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R212	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R213	VRS-CZ1JF561J	J	560	1/16W	Metal Oxide	AA
R214	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R215	VRS-CZ1JF471J	J	470	1/16W	Metal Oxide	AA
R216	VRS-CZ1JF392J	J	3.9k	1/16W	Metal Oxide	AA
R217	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R219	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R501	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R502	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R503	VRS-CZ1JF123J	J	12k	1/16W	Metal Oxide	AA
R504	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R505	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R506	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R507	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R508	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R509	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R510	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R511	VRS-CZ1JF103J	J	10k (VL-E78E)	1/16W	Metal Oxide	AA
R512	VRS-CZ1JF103J	J	10k (VL-E66S/H)	1/16W	Metal Oxide	AA
R515	VRS-CZ1JF000J	J	00	1/16W	Metal Oxide	AA
R517	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R518	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R519	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R520	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R521	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R522	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R523	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R524	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R525	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R526	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R527	VRS-CZ1JF224J	J	220k	1/16W	Metal Oxide	AA
R528	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R529	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R530	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R531	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R532	VRS-CZ1JF102J	J	1.0k	1/16W	Metal Oxide	AA
R551	VRS-CZ1JF153J	J	15k	1/16W	Metal Oxide	AA
R552	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R553	VRS-CZ1JF104D	J	100k	1/16W	Metal Oxide	AB
R554	VRS-CZ1JF473D	J	47k	1/16W	Metal Oxide	AB
R555	VRS-CZ1JF103D	J	10k	1/16W	Metal Oxide	AB
R556	VRS-CZ1JF103D	J	10k	1/16W	Metal Oxide	AB
R557	VRS-CZ1JF105J	J	1.0M	1/16W	Metal Oxide	AA
R558	VRS-CZ1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R559	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R560	VRS-CZ1JF222J	J	2.2k	1/16W	Metal Oxide	AA
R561	VRS-CZ1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R562	VRS-CZ1JF153F	J	15k	1/16W	Metal Oxide	AA
R563	VRS-CZ1JF244F	J	240k	1/16W	Metal Oxide	AA
R564	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R565	VRS-CZ1JF223J	J	22k	1/16W	Metal Oxide	AA
R566	VRS-CZ1JF103J	J	10k	1/16W	Metal Oxide	AA
R567	VRS-CZ1JF121J	J	120	1/16W	Metal Oxide	AA
R568	VRS-CZ1JF392J	J	3.9k	1/16W	Metal Oxide	AA

Ref. No.	Part No.	★	Description	Code
R569	VRS-CZ1JF121J	J	120 1/16W Metal Oxide	AA
R570	VRS-CZ1JF392J	J	3.9k 1/16W Metal Oxide	AA
R571	VRS-CZ1JF180J	J	18 1/16W Metal Oxide	AA

MISCELLANEOUS PARTS

SC2	QSOCN1987TAZZ	J	Socket	AE
SC3	QSOCN1787TAZZ	J	Socket	AE
SC4	QSOCN1986TAZZ	J	Socket	AF
SC5	QSOCN1285TAZZ	J	Socket	AE
SC6	QSOCN3087TAZZ	J	Socket	AF
SLD	PSLDM3280TAFW	J	Shield	AC
SLD	PSLDM3281TAFW	J	Shield	AC

RAMP-0017TAN0 HEAD AMP UNIT

INTEGRATED CIRCUIT

IC301	VHIAN3358SH-1	J	H/A IC	AQ

TRANSISTORS

Q301	VSUMG2/////-1	J	Transistor	AC
	or			
	VSXP1213///-1	J	Transistor	AB
Q341	VS2SB709A/Q1E	J	Transistor	AC
Q342	VS2SB709A/Q1E	J	Transistor	AC
Q343	VSDTC144EE/-1	J	Transistor	AA
	or			
	VSUN9213///-1	J	Transistor	AA

COILS

L301	VP-NM220K1R0N	J	Peaking	22µH	10%	AB
	or					
	VPAXM220KR88N	J	Peaking	22µH	10%	AC
L341	VPABM100J2R6N	J	Peaking	10µH	5%	AC
	or					
	VPAWM100J2R6N	J	Peaking	10µH	5%	AC
L342	VPABM101J160N	J	Peaking	100µH	5%	AC

CAPACITORS

C305	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C306	VCCCCY1HH820J	J	82pF	50V	Ceramic	AA
C307	VCCCCY1HH820J	J	82pF	50V	Ceramic	AA
C308	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C309	VCKYCY1CF104Z	J	0.1µF	16V	Ceramic	AA
C310	VCKYCY1CF104Z	J	0.1µF	16V	Ceramic	AA
C311	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C312	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C313	VCSATE1AJ226M	J	22µF	10V	Tantalum	AD
C314	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C320	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C321	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C340	VCCCCY1HH101J	J	100pF	50V	Ceramic	AA
C341	VCCCCY1HH151J	J	150pF	50V	Ceramic	AA
C342	VCCCCY1HH101J	J	100pF	50V	Ceramic	AA
C344	VCKYCY1CF104Z	J	0.1µF	16V	Ceramic	AA
C345	VCKYCY1CF104Z	J	0.1µF	16V	Ceramic	AA
C346	VCKYCY1HB102K	J	1000pF	50V	Ceramic	AA
C349	VCCCCY1HH680J	J	68pF	50V	Ceramic	AA
C350	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C351	VCKYCY1HF103Z	J	0.01µF	50V	Ceramic	AA
C352	VCCCCY1HH680J	J	68pF	50V	Ceramic	AA

RESISTORS

R302	VRS-CY1JF562J	J	5.6k	1/16W	Metal Oxide	AA
R303	VRS-CY1JF562J	J	5.6k	1/16W	Metal Oxide	AA
R310	VRS-CY1JF181J	J	180	1/16W	Metal Oxide	AA
R311	VRS-CY1JF120J	J	12	1/16W	Metal Oxide	AA
R312	VRS-CY1JF120J	J	12	1/16W	Metal Oxide	AA
R315	VRS-CY1JF392J	J	3.9k	1/16W	Metal Oxide	AA
R321	VRS-CY1JF472J	J	4.7k	1/16W	Metal Oxide	AA
R330	VRS-CY1JF332J	J	3.3k	1/16W	Metal Oxide	AA
R331	VRS-CY1JF102J	J	1k	1/16W	Metal Oxide	AA
R332	VRS-CY1JF391J	J	390	1/16W	Metal Oxide	AA
R333	VRS-CY1JF000J	J	0	1/16W	Metal Oxide	AA
R340	VRS-CY1JF680J	J	68	1/16W	Metal Oxide	AA
R342	VRS-CY1JF271J	J	270	1/16W	Metal Oxide	AA
R343	VRS-CY1JF221J	J	220	1/16W	Metal Oxide	AA
R344	VRS-CY1JF223J	J	22k	1/16W	Metal Oxide	AA
R345	VRS-CY1JF333J	J	33k	1/16W	Metal Oxide	AA
R350	VRS-CY1JF123J	J	12k	1/16W	Metal Oxide	AA
R351	VRS-CY1JF682J	J	6.8k	1/16W	Metal Oxide	AA
R352	VRS-CY1JF563J	J	56k	1/16W	Metal Oxide	AA
R353	VRS-CY1JF153J	J	15k	1/16W	Metal Oxide	AA
R398	VRS-CY1JF000J	J	0	1/16W	Metal Oxide	AA
R399	VRS-CY1JF000J	J	0	1/16W	Metal Oxide	AA

CONNECTERS

SC301	QSOCN0985TAZZ	J	Socket	AE
SC302	QSOCN1886TAZZ	J	Socket	AD
SC303	QSOCN1560TAZZ	J	Socket	AE
SC304	QSOCN0686TAZZ	J	Socket	AC
SC305	QCNCW7068TAZZ	J	Connector	AG
SC306	QSOCN1085TAZZ	J	Socket	AE

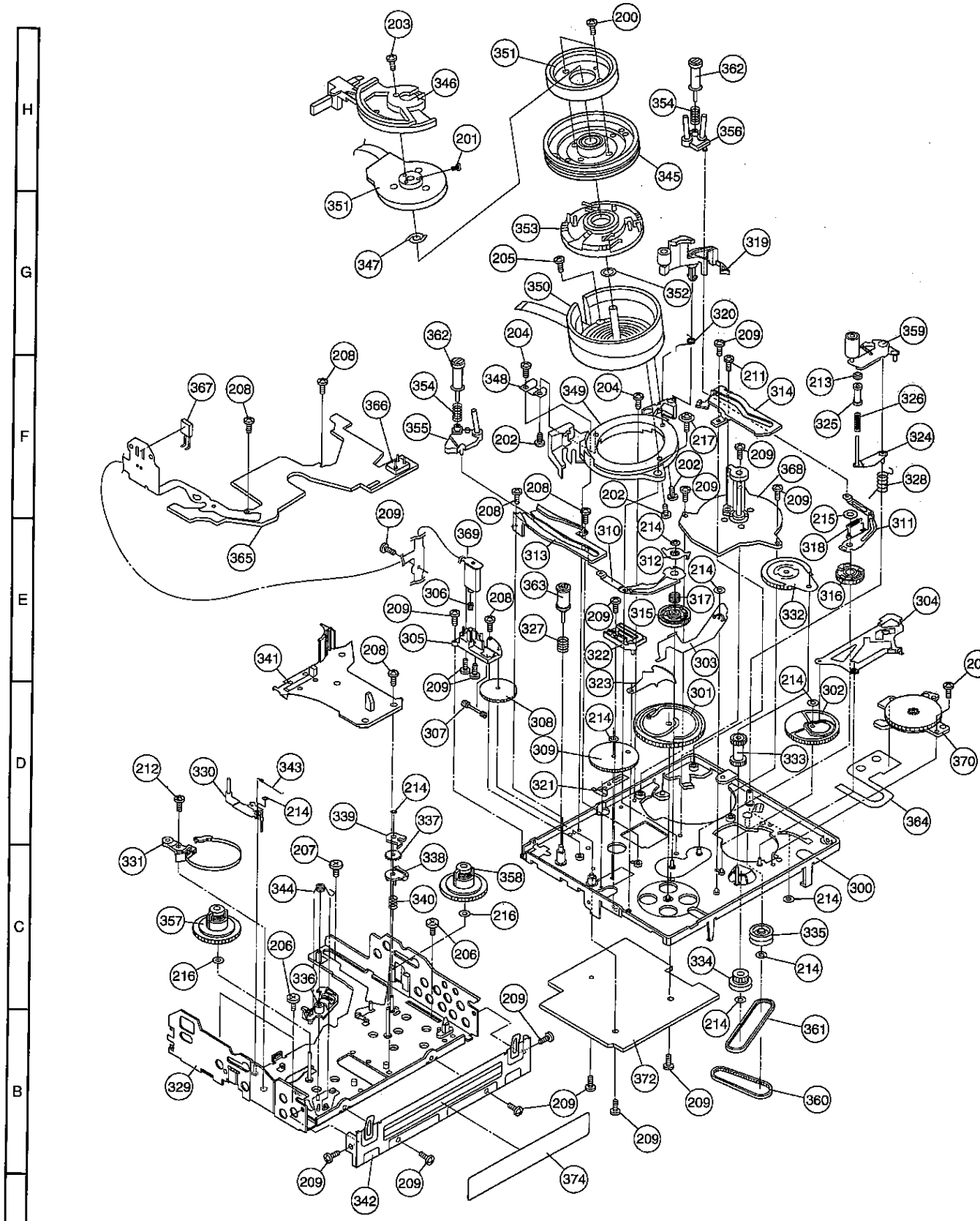
OTHERS PARTS

	SPAKC6662TAZZ	J	Packing Case(VL-E66S)	AF

Ref. No.	Part No.	★	Description	Code
	SPAKC6664TAZZ	J	Packing Case(VL-E78E)	AF
	SPAKC6663TAZZ	J	Packing Case(VL-E66H)	AF
	SPAKP6049TAZZ	J	Wrapping Paper	AC
	SSAKA0087TAZZ	J	Polyethylene Bag	AD
	TGANL0004TAZZ	J	Guarantee Card (VL-E66S/H)	AC
	TINSE0154TAZZ	J	Operation Manual (VL-E66H)	AA
	TINSE0236TAZZ	J	Operation Manual (VL-E66H)	AF
	TINSE0237TAZZ	J	Operation Manual (VL-E66H)	AG
	TINSL0064TAZZ	J	Operation Manual (VL-E66S/78E)	AN
	TINSZ1455TAZZ	J	Operation Manual (VL-E78E)	AF
	GCOVH1192TASA	J	Lens Cap	AG
	GCOVH1172TAZZ	J	Sun Hood(VL-E66S/H only)	AV
	QCNW-1338TA00	J	DC Cable	AR
	UBNDS0010TASA	J	Shoulder Strap	AH
	UBATM0006TAZZ	J	Battery Pack	BC
	QCNW-1295TAZZ	J	A/V Cable	AK
	or			
	QCNW-1298TAZZ	J	A/V Cable	AD
	SPAKA6176TAZZ	J	Packing Case	—
	SPAKA6196TAZZ	J	Packing ADD.	—

VL-E78E

MECHANISM CHASSIS EXPLODED VIEW



MECHANISM PARTS

Ref. No.	Part No.	★	Description	Code
300	LCHSM0163GEZZ	J	Main Chassis Assy	AW
301	NGERH1280GEZZ	J	Main Cam	AD
302	NGERH1281GEZZ	J	Sub-Cam	AD
303	MLEVF0470GEFW	J	Ejec Lever	AD
304	MLEVF0492GEFW	J	M Function Lever	AF
305	LHLDZ1966GEZZ	J	L Block Holder	AD
306	NGERW1064GEZZ	J	Worm Pulley	AC
307	NGERW1065GEZZ	J	Worm	AD
308	NGERH1282GEZZ	J	Worm Wheel	AC
309	NGERH1283GEZZ	J	Lo Relay Gear	AC
310	MARMM0126GEZZ	J	S Lo Arm Assy	AF
311	MARMM0128GEZZ	J	T Lo Arm Assy	AG
312	LANGA0069GEFW	J	S Lo Arm Retainer	AD
313	PGiDM0146GEZZ	J	Sup Rail	AD
314	PGiDM0147GEZZ	J	Tu Rail	AD
315	NGERH1284GEZZ	J	Sup Lo Gear	AC
316	NGERH1285GEZZ	J	Tu Lo Gear	AC
317	MSPRD0167GEZZ	J	S Lo Arm Double-Acting Spring	AE
318	MSPRT0407GEZZ	J	T Lo Arm Double-Acting Spring	AC
319	MLEVP0283GEZZ	J	HC Lever Assy	AF
320	MSPRD0168GEZZ	J	HC Double-Acting Spring	AC
321	MSLiF0074GEFW	J	Ten Arm Operation Lever	AD
322	PGiDM0148GEZZ	J	Ten Arm Guide	AC
323	NGERH3045GEFW	J	Segment Gear	AD
324	MLEVF0472GEZZ	J	Tu Guide Assy	AC
325	PGiDP0027GEZZ	J	Tu Guide	AE
326	MSPRC0183GEZZ	J	Tu Guide Spring	AA
327	MSPRC0184GEZZ	J	Si Roller Spring	AA
328	MSPRC0208GEZZ	J	Tu Guide Lever Spring	AC
329	CCHSS0045GE01	J	Slide Chassis Assy	AX
330	MLEVF0495GEZZ	J	Ten Arm Assy	AC
331	LBNDK3021GEZZ	J	Ten Band Assy	AF
332	NiDR-0016GEZZ	J	Swing Gear Assy	AF
333	NGERH1286GEZZ	J	Driving Gear	AC
334	NGERH1287GEZZ	J	Pulley Gear	AD
335	NPLYV0157GEZZ	J	Relay Pulley	AD
336	MLEVP0284GEZZ	J	S Brake	AC
337	NGERH1288GEZZ	J	Tu Brake Gear	AC
338	MLEVP0285GEZZ	J	Tu Main Brake	AC
339	MLEVP0286GEZZ	J	Tu Sub-Brake	AC
340	MSPRD0169GEZZ	J	Tu Brake Spring	AD
341	LHLDZ1967GEZZ	J	Light Guide Holder Assy	AF
342	LANGG9102GEFW	J	Down Guide	AF
343	MSPRT0408GEZZ	J	Tension Spring	AD
344	MSPRD0170GEZZ	J	S Brake Spring	AD
345	DDRMU0027HE02	J	Upper Drum Assy	BE
346	PGiDM0144GEZZ	J	Tape Guide	AD
347	QBRSK0032GEZZ	J	Earth Brush	AD
348	QBRSK0039GEZZ	J	Earth Spring	AD
349	PGiDM0143GEZZ	J	Drum Base	AG
350	DDRML0020HE01	J	Lower Drum Assy	AY
351	RMOTP1131GEZZ	J	Drum Motor	AV
352	PSPAQ0010GEZZ	J	Gap Adjusting Shim	AC
353	NRTR-0094GEZZ	J	R Tr Rotor Assy	AQ
354	MSPRC0209GEZZ	J	Gr Adjusting Spring	AC
355	LPOLM0058GEZZ	J	S Pole Base	AK
356	LPOLM0059GEZZ	J	T Pole Base	AK
357	NDAiV1071GEZZ	J	Sup Reel Support	AG
358	NDAiV1072GEZZ	J	Tu Reel Support	AG
359	MLEVF0491GEZZ	J	Pinch Lever Assy	AY
360	NBLTT0012GEZZ	J	Timing Belt S	AE
361	NBLTT0013GEZZ	J	Timing Belt L	AE
362	NROLP0108GEZZ	J	Guide Roller Assy	AG
363	NROLP0109GEZZ	J	Si Roller Assy	AH
364	QPWBH5428GEZZ	J	Mode FPC	AK
365	CPWBN5402GE01	J	Sensor Assy	BC
366	QSW-M0042GEZZ	J	Recognition SW	AH
367	RDTCH0037GEZZ	J	Dew Sensor	AF
368	RMOTV1019GEZZ	J	Cap. Motor	AZ
369	RMOTM1075GEZZ	J	Load. Motor	AL
370	QSW-R0038GEZZ	J	Mode SW	AG
372	RAMP-0017TAN0	J	H/A PWB	AY
374	TLABH0196TAZZ	J	Caution Label	AB
200	LX-BZ3158GEFF	J	Screw M1.7x1.8	AA
201	LX-XZ3036GEFP	J	Screw M2.0x6.0	AD
202	LX-BZ3175GEFN	J	Screw M1.7x4.0	AC
203	LX-BZ3163GEFN	J	Screw M1.7x2.5	AC
204	LX-HZ3074GEFN	J	Screw M1.7x5.3 S Tight	AA
205	LX-BZ3177GEFF	J	Screw M1.4x1.5	AB
206	LX-BZ3132GEZZ	J	Screw M1.4x1.5xD3.5	AA
207	LX-BZ3178GEZZ	J	Screw M1.4x1.5xD4.0	AD
208	LX-HZ3083GEFF	J	Screw M1.4x2.5 S Tight	AB
209	LX-HZ3077GEFN	J	Screw M1.4x3.0 S Tight	AA
211	LX-HZ3084GEFF	J	Screw M1.4x4.0 S Tight	AC
212	LX-HZ3085GEFD	J	Screw M1.4x4.0 SW S Tight	AD
213	LX-NZ3053GEZZ	J	Screw M1.4 Nut	AC
214	LX-WZ1076GE02	J	Washer D0.8xD3.0x0.2t Plastics	AA
215	LX-WZ1075GE02	J	Washer D2.1xD5.0x0.25t Plastics	AA
216	XWHJZ12-02040	J	Washer D1.2xD4.0x0.25t Plastics	AC
217	LX-HZ3086GEFN	J	Screw M1.7x5 S Tight Cup	AC

—— End of Mechanism Parts ——

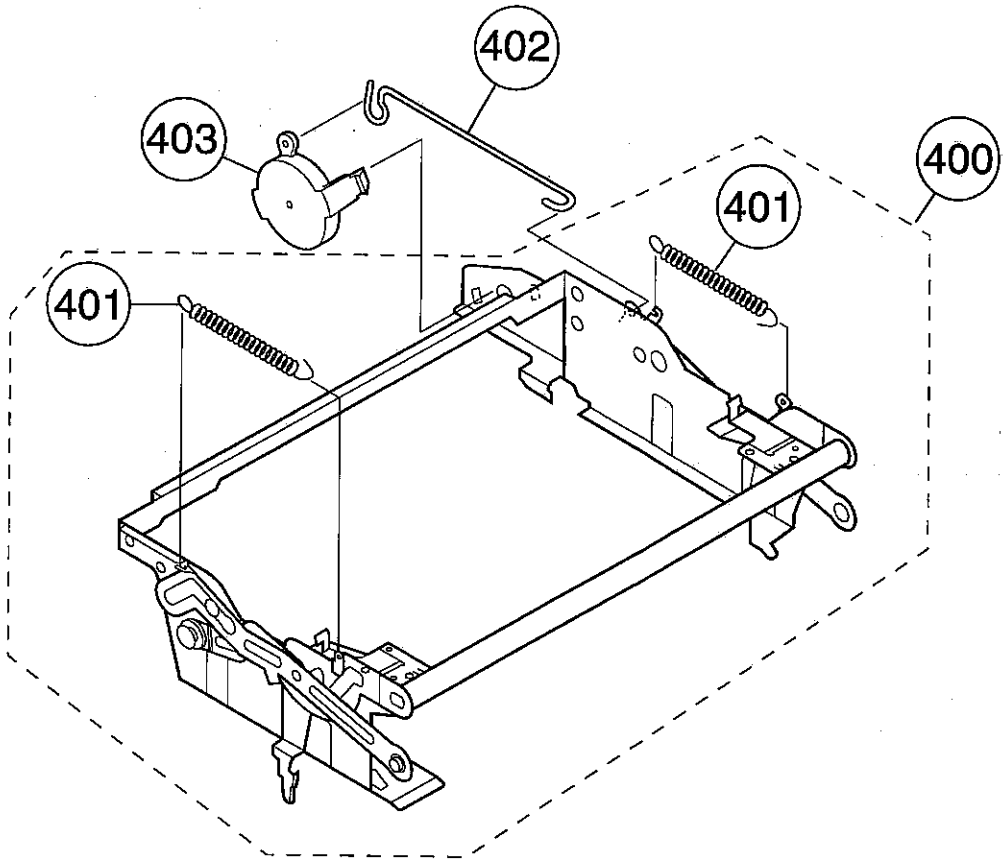
Ref. No.	Part No.	★	Description	Code

CASSETTE HOUSING PARTS

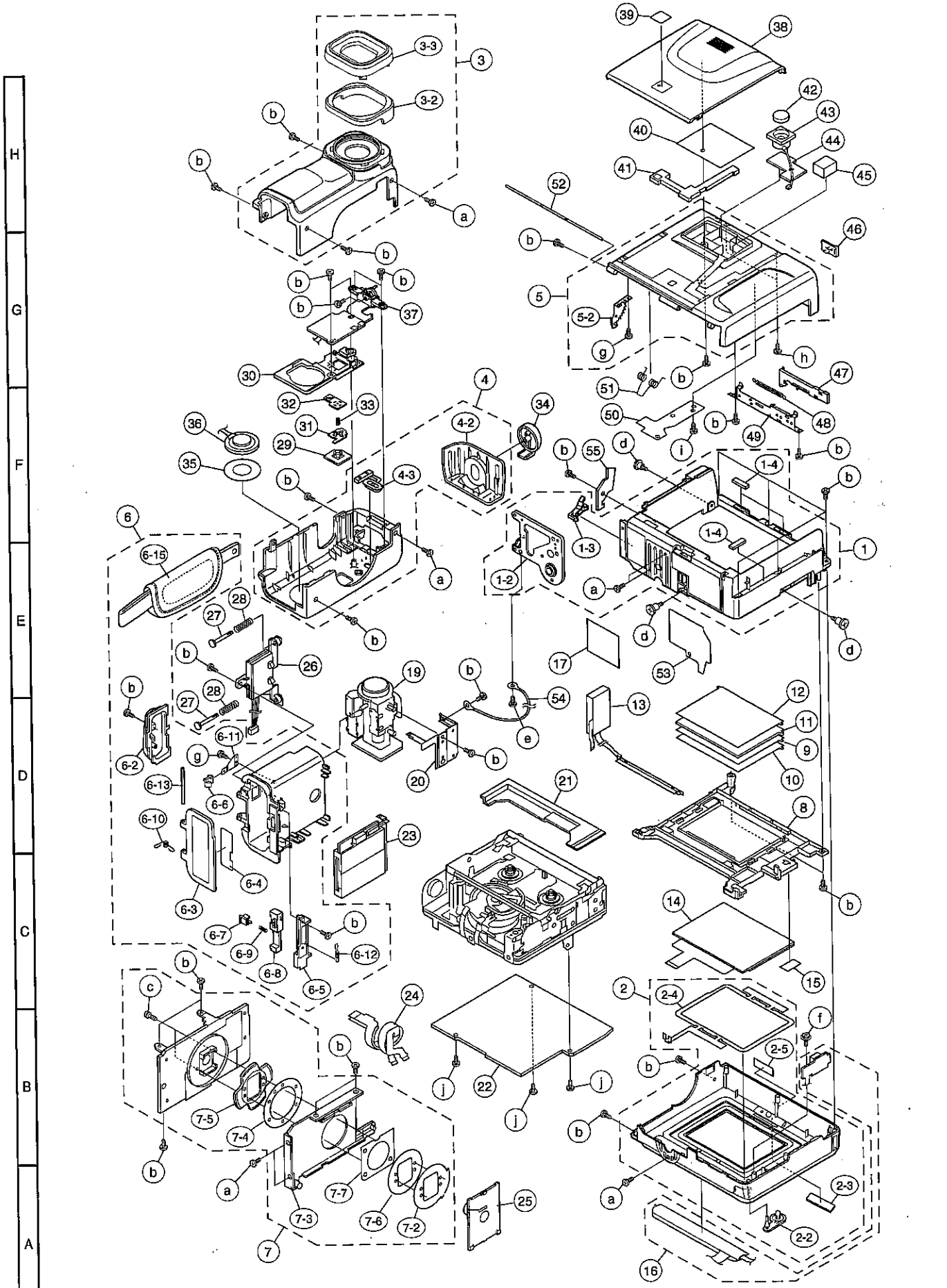
400	CHLDX3077GE01	J	Cassette Compartment Assy	AY
401	MSPRT0414GEZZ	J	Up Main Spring	AD
402	MROD-0014GEFJ	J	Damper rod	AG
403	PDMP-0013GEZZ	J	Cassette Compartment Damper	AG

—— End of Cassette Housing Parts ——

CASSETTE HOUSING CONTROL UNIT



CABINET EXPLODED VIEW



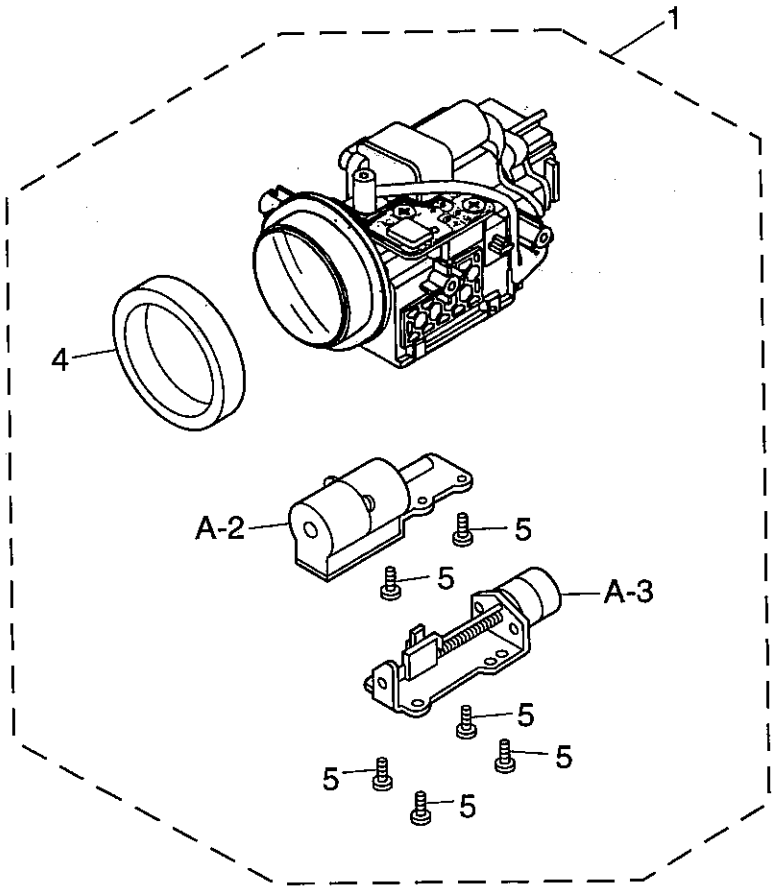
CABINET PARTS LIST

Ref. No.	Part No.	★	Description	Code
1	DCABA6153TAK1	J	V Frame Service	AR
1-2	LANGK0332TAZZ	J	Tripod Angle Ass'y	AK
1-3	MLEVP0025TAZZ	J	Eject Lever	AC
1-4	PSPAG0081TAZZ	J	VCR Lid Cushion	AB
2	DCABB6153TAK1	J	L Cabinet Service	AQ
2-2	GCOVH1195TASA	J	Jack Cover	AD
2-3	HBDGB0047TASA	J	SHARP Badge	AB
2-4	QEARP0203TAZZ	J	LCD Earth Sheet	AE
2-5	TLABH0263TAZZ	J	Facing Recording Caution Label	AB
3	CCABC6069TAK1	J	Camera Front Cabinet Ass'y	AP
3-2	GCOVA1412TASA	J	Lens Decoration Cover	AD
3-3	GCOVH1191TASA	J	Lens Hood	AD
4	DCABD6069TAK1	J	Camera Back Cabinet Service	AQ
4-2	GCOVA1410TAKA	J	Zoom Cover	AF
4-3	JBTN-0257TASA	J	S/S Button	AC
5	DFTAC1235TAK1	J	VCR Lid Service	AT
5-2	NGERH3004TAZZ	J	Damper Gear	AE
6	CHLDZ1363TAK2	J	Battery Holder Ass'y	AV
6-2	GCOVA1411TAKA	J	Hand Strap Upper Cover	AD
6-3	GFTAB1055TAKA	J	Battery Lid	AD
6-4	HDECP0041TASA	J	Battery Decoration Plate	AC
6-5	LHLDZ1362TAZZ	J	Battery Lid Lever Holder	AD
6-6	LHLDZ1364TA00	J	Battery Intermediate Lock	AC
6-7	MLEVP0026TASA	J	Battery Lock Lever	AC
6-8	MLEVP0027TASA	J	Battery Lid Lever	AD
6-9	MSPRC0084TAFJ	J	Battery Lock Spring	AA
6-10	MSPRD0046TAFF	J	Battery Lid Spring	AB
6-11	MSPRP0154TAFJ	J	Battery Intermediate Lock Spring	AB
6-12	MSPRT0035TAFJ	J	Battery Lid Lock Spring	AA
6-13	NSFTZ0058TAFF	J	Battery Lid Axle	AB
6-15	UBNDT0094TASA	J	Hand Strap	AM
7	DHLDZ1370TAK1	J	Tilt Ass'y	AT
7-2	LANGH0064TAFW	J	Stopper Fitting	AD
7-3	LHLDZ1369TAKA	J	Tilt Frame V	AL
7-4	PSPAA0004TAFW	J	Aluminium Spacer	AC
7-5	PSPAZ0135TAZZ	J	Tilt Spacer	AF
7-6	PSPAZ0136TAZZ	J	Rotation Spacer	AD
7-7	PSPAZ0151TAFW	J	Spacer	AC
8	LHLDZ1367TAZZ	J	LCD Holder	AG
9	PSHEP0044TAZZ	J	Prism Sheet	AG
10	PSHEP0045TAZZ	J	Diffusion Sheet	AD
11	PGIDM0025TAZZ	J	Light Guide	AG
12	PMIR-0021TAZZ	J	Reverberation Sheet	AC
13	CLMPV0023TA02	J	Lamp Unit	AZ
14	CPNLC0026RM01	J	LCD Panel	BZ
15	PZETV0343TAZZ	J	LCD Glass Retaining	AA
16	QSW-Z0244TAZZ	J	VCR Operation Unit	AT
17	TLABM1690TAZZ	J	Model Label(VL-E66S)	AC
17	TLABM1696TAZZ	J	Model Label(VL-E66H)	AC
17	TLABM1700TAZZ	J	Model Label(VL-E78E)	AD
19	CLNSA0124TA02	J	Lens Unit	BR
20	LANGF0326TAFW	J	Lens Fitting	AE
21	GFTAC1241TASA	J	Cassette Compartment Cover	AD
22	DUNTK2646QA00	J	VCR PWB Unit(VL-E66S/H)	—
22	DUNTK2646QA01	J	VCR PWB Unit(VL-E78E)	—
23	DUNTK2649QA00	J	Camera PWB Unit (VL-E66S/H)	—
23	DUNTK2649QA01	J	Camera PWB Unit(VL-E78E)	—
24	QPWBH2568TAZZ	J	Tilt FPC	AS
25	LHLDW1036TA00	J	FPC Holder	AD
26	QTANZ0113TAZZ	J	Battery Terminal Unit	AH
27	NSFTZ0060TAZZ	J	Battery Push-out Shaft	AD
28	MSPRC0085TAFJ	J	Battery Push-out Spring	AB
29	JKNBP0108TASF	J	Power Knob	AC
30	LHLDZ1365TASA	J	Power Holder	AD
31	JBTN-0247TASD	J	Power Rock Button	AD
32	LHLDZ1366TAZZ	J	Power Rock Button Holder	AC
33	MSPRC0083TAFJ	J	Power Spring	AA
34	JKNBP0120TASA	J	Zoom Knob	AC
35	PSPAZ0162TAZZ	J	Speaker Mesh	AC
36	VSP0028P-46WN	J	Speaker	AM
37	QSW-Z0243TAZZ	J	Power Unit	AQ
38	GCOVA1413TAKA	J	VCR Lid Cover(VL-E66S/H)	AN
38	GCOVA1460TAKA	J	VCR Lid Cover(VL-E78E)	AN
39	HBDGS0056TASA	J	LCD Badge	AD
40	PSPAH0019TAZZ	J	Microphone Spacer	AD
41	PMLT-0128TAZZ	J	Sound Insulation Molt (Lower)	AA
42	PMLT-0127TAZZ	J	Microphone Molt(Front)	AA
43	RMICC0073TAZZ	J	Microphone	AN
44	PMLT-0129TAZZ	J	Microphone Molt(Rear)	AA
45	PMLT-0132TAZZ	J	Sound Insulation Molt (Upper)	AB
46	JKNBP0119TASA	J	Open Knob	AC
47	LHLDZ1361TAZZ	J	VCR Lid Rock	AD
48	MSPRT0034TAFJ	J	Lid Rock Spring	AC
49	LANGK0330TAZZ	J	Lid Rock Angle Ass'y	AF
50	PLOVP9057TAZZ	J	Microphone Lead Cover	AC
51	MSPRD0047TAFJ	J	VCR Lid Spring	AD
52	NSFTZ0059TAFW	J	VCR Lid Shaft	AD
53	PSPAZ0148TAZZ	J	Microphone Lead Spacer	AB
54	QCNW-1678TAZZ	J	Earth Lead	AC
55	QSW-Z0242TAZZ	J	Turn/Eject SW	AH
a	XiPSF20P04000	J	M2x4 Small Screw, Black Zinc Plating	AA
b	LX-HZ0018TAFF	J	M2x6 Tapping	AA
c	XBPSD26P08J00	J	M2.6x8 With Spring Washer	AA
d	LX-BZ0191TAFD	J	M2 Special Screw	AC
e	LX-HZ0048TAFE	J	M2x3 Tapping	AA
f	LX-UZ0015TAFD	J	M2x8 Special Screw	AA
g	LX-HZ0045TAFN	J	M2x4 Tapping	AA
h	LX-HZ0046TAFF	J	M1.4x5 Tapping	AA
i	LX-HZ3064CEFF	J	M2x5.5 Tapping	AA

Ref. No.	Part No.	★	Description	Code
j	XiPSD20P03000	J	M2x3 Small Screw	AA

LENS UNIT PARTS LIST

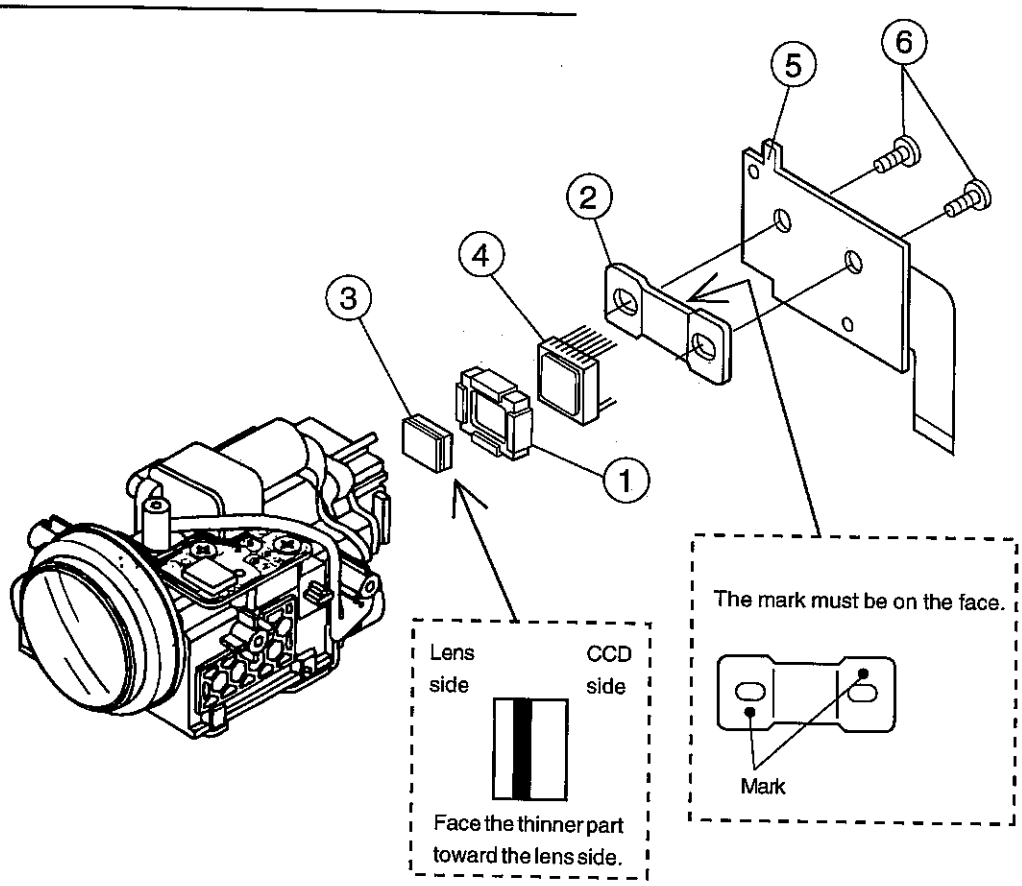
Ref. No.	Part No.	★	Description	Code
1	CLNSA0124TA02	J	Lens Ass'y	BR
A-2	99JBCA307A015	J	F Motor Ass'y	AY
A-3	99JBCA307A010	J	Z Motor Ass'y	AY
4	99JBCA307B002	J	Anti-Vibration Rubber	AD
5	99JDH170351FB	J	Screw (B)	AB



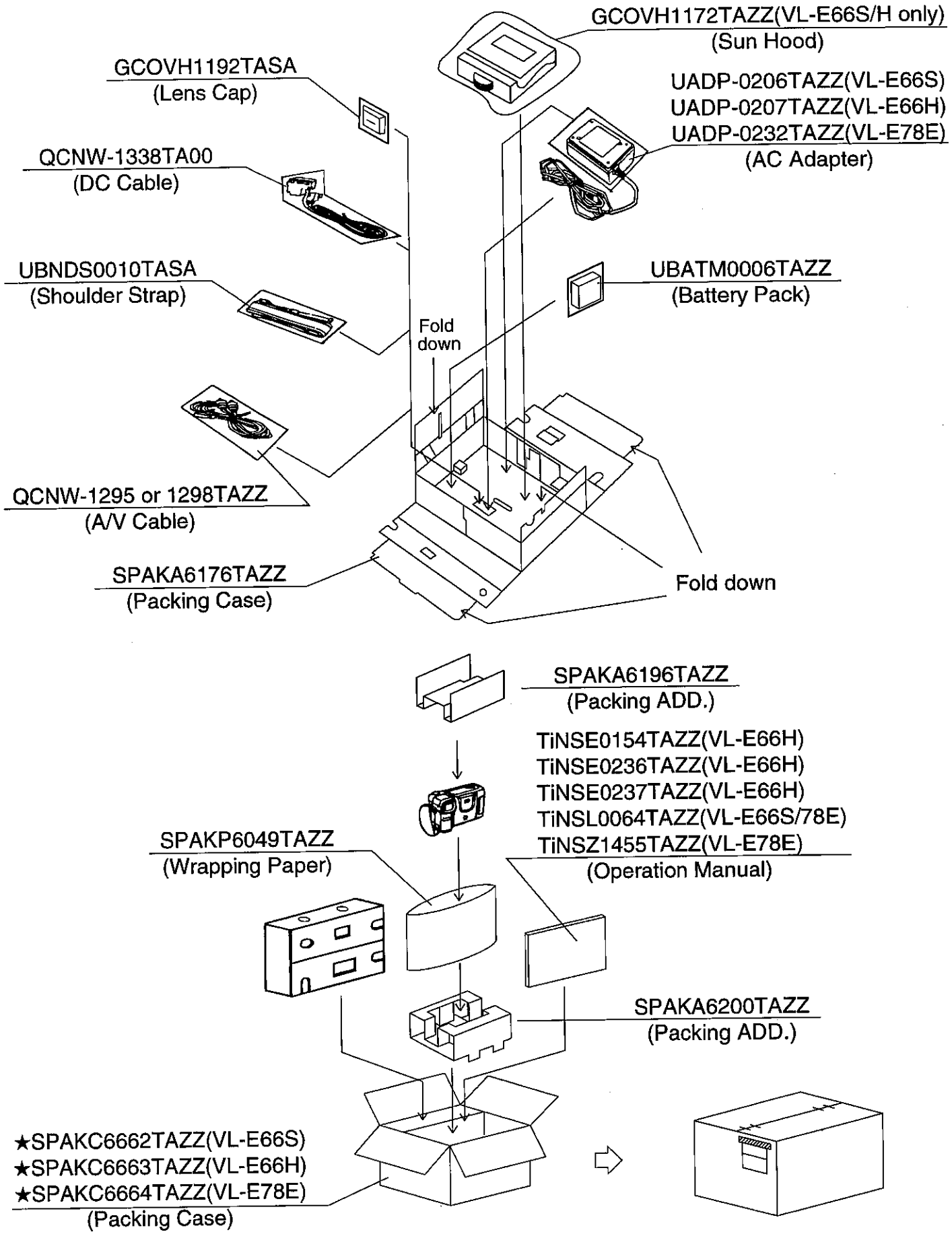
Ref. No.	Part No.	★	Description	Code

CAMERA UNIT PARTS LIST

1	PCOVM8016TA00	J	Dustproof Rubber	AC
2	LANGK0324TAFW	J	CCD Retaining Plate	AG
3	PFiLW0060TAZZ	J	Optical Filter	AS
4	VHiLZ2423B5-1	J	CCD Sensor	BD
5	DUNTK2667PM00	J	CCD PWB Unit(VL-E66S/H)	—
5	DUNTK2667PM01	1	CCD PWB Unit(VL-E78E)	—
6	LX-HZ0013TAFF	J	Screw (1.7 X 6)	AA



11. PACKING OF THE SET



★ Not Replacement Item

12. AC ADAPTER

UNIT No. UADP-0206TAZZ (VL-E66S)
UADP-0207TAZZ (VL-E66H)
UADP-0232TAZZ (VL-E78E)

Features

- Compact and light-weight design for easier portability.
- Automatic voltage change AC 110V to AC 240V allows the adapter usage even in your trips abroad.
- Charging function with battery pack.
- Rapid charging function to enable the charging in a shorter period of time.

Specifications

Power Requirement :	AC110-240V, 50/60Hz
DC Output :	DC4.5V
Power Consumption :	27.0W
Dimension (approx.) :	$2^{31}/_{32}$" (W) X 2" (H) X 5 $^{5}/_{16}$" (D) [75mm(W) X 50.5mm (H) X 135mm (D)]

*Specifications are subject to change without notice.

12-1. OPERATION MANUAL

12-1-1. Outline

This adapter is designed as a power supply for the camcorder as well as a quick charger for the battery used in the camcorder.
As shown in the block diagram (Figure 12-1-1), the adapter consists of a separately excited switching regulator which uses the control IC and a multi-functional circuit at the secondary side.
The primary side control section and the secondary side multi-functional circuit, composed mainly of surface mounted devices, are mounted in a small portable casing for portable uses.
Available input voltage is 120 to 240V (50/60 Hz), so that this handy unit can be carried around and used all over the world.
The basic operation is controlled by the section to perform constant voltage control (designed to compare the operating voltage with the secondary side reference voltage provided at a switching power supply), and constant current control, as well as by the timer for quick battery charging, various detecting circuits, and sequence control section. This unit, as an AC adapter, supplies constant voltage DC power through the 3-pin DC jack with a control terminal, and as a battery charger, the unit starts the quick charging when the specific battery is loaded with the DC plug unconnected.

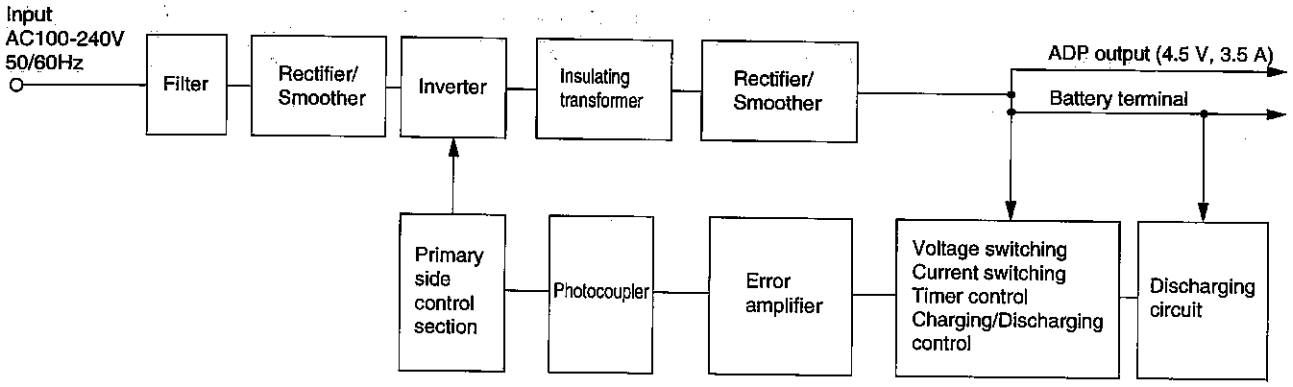


Fig. 12-1-1 Block diagram (Camcorder adapter)

12-1-2. Operation

1.Adapter mode
When the DC plug is attached to the adapter, the stable DC voltage (4.5V, 3.5A) is continuously supplied through the DC jack to operate camcorder.
The power consumption is kept constant over the whole control input range, regardless of input fluctuation.
The output is 1.3 or more times higher than rated current so that the unit can withstand transition accompanied by VTR starting current flow and rush current flow.
Also, for the adapter output, the overcurrent protector of specific characteristics ensuring power control against short-circuiting from outside is used to protect the adapter from being damaged or broken down. It also prevents the excessive heating inside the adapter.

2.Ni-Cd charge mode
This adapter, when Ni-Cd battery is attached, can be used as a quick charger. This charging operation has three operating modes which are switched successively.
The first stage is called the initial charging. A constant current 1.5A is used to charge within voltage limit (5.7V) and time limit (set by 5 min timer).
The voltage is limited in order to protect the battery against overvoltage and overcharge which may occur due to recharging of fully charged battery.
The time limit serves to prevent the charging error which may occur due to initial voltage drop of inactive battery.
The second stage is a quick charging. As with initial charging, 1.5A quick charge is performed within voltage limit (5.7V) and time limit set by the timer (180 minutes) which are different from those of the initial charging.
During quick charging, a voltage drop (-ΔV phenomenon) of the battery which occurs at the end of charging is detected, the charging is stopped, and the next stage is started.
When charging current is 1.5A, the 1500mAh battery, and the under-mentioned 2600mAh nickel-hydrogen battery are fully charged for about 60 minutes and about 140 minutes, respectively.

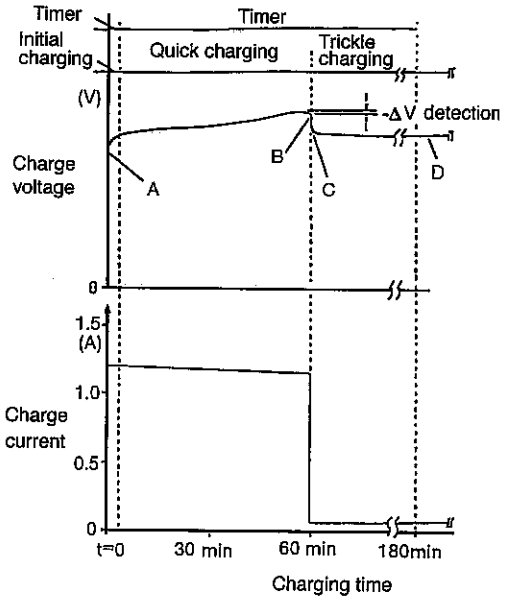


Fig. 12-1-2 Charging characteristics In case of 1500mAh Ni-Cd battery

The timer is set to 180 minutes time limit to avoid overcharge which may be caused by -ΔV detection error.
Here, -ΔV detection is set to 40 to 80mV.
The third stage is trickle charging. In this mode, the fully charged state is kept even after the quick charging is completed.
The trickle charging is generally set at 1/30 to 1/40C depending on the characteristics of battery. This adapter adopts the charging system which is controlled by the constant voltage control operation output and fixed resistance.
These charging stages are shown in Figure 12-1-2.

3.Refresh mode
In order to prevent reduction of charging efficiency due to memory effect, this adapter has a function to execute the aforementioned charging operation after the provided battery is forcedly discharged to the full extent by the user switch operation.
This mode is commonly specified for the Ni-Cd battery and the undermentioned nickel-hydrogen battery.
When the refresh switch is pressed with the battery attached, a discharge current (0.3 to 0.4A) will flow out, and power will be consumed by the resistor inside the adapter.
To minimize degradation of battery, the battery discharge is ended when voltage of discharging battery reduces down to about 3.0V. Then, the charging mode is set automatically.

4.Nickel-hydrogen battery charging mode
When the nickel-hydrogen battery is attached to the adapter to which the DC plug is not attached, existence of T terminal is detected, and the quick charging of nickel-hydrogen is started.
The charging of the nickel-hydrogen battery has five operating modes. These modes are switched successively.
When the nickel-hydrogen battery is attached, the pre-charging is performed at first.
In this mode, it is charged with a constant current (about 0.5A), and the mode is switched to the next mode after 2 minutes.
Since this period is provided to activate the battery, the completion of charging is not detected. Only the battery protection functions such as overvoltage detection, abnormal temperature detection, etc. are available here.

The next operation is the initial charging as in case of Ni-Cd battery.
Differing from the Ni-Cd battery, the limit voltage of the overvoltage detection is 5.1V and an abnormal temperature detection function is provided.

The third stage is the quick charging mode, which is equivalent to the quick charging of the Ni-Cd battery.
The phenomenon detection function in this mode and the mode shift due to detection are as follows:

I) -ΔV detection
If battery voltage -ΔV (22 to 62mV) is detected, the mode is switched to the trickle charge mode.

II) Overvoltage detection
Excess of battery voltage over 5.1V is judged to be abnormal, and the mode is switched to the trickle charge mode.

III) ΔT detection
If the gradient of temperature rise of the charging battery exceeds 1°C/min., it is judged that the charging is completed soon and the mode is switched to the sub-charging mode.

IV) Abnormal temperature detection
If the battery temperature reaches 60°C to 65°C during charging, charging is stopped to protect the battery, and the mode is switched to the trickle charging mode.

V) Timer operation
When 180 minutes elapse after start of quick charging, the mode is switched to the sub-charging mode.

In the sub-charging mode which is set due to ΔT detection and timer operation in the quick charging mode, constant current (about 0.5A) charging is performed as with the pre-charging mode.
At this time, the mode is switched by -ΔV detection function, overvoltage detection function and abnormal temperature detection function as in case of quick charging. But the mode is switched to the sub-charging mode by the built-in timer when one hour elapses after the pre-charging is started.

As with the Ni-Cd battery, the trickle charging current is supplied at the constant voltage and fixed resistance in the trickle charging mode (fifth stage).

12-1-3. Circuits

The circuits used for the adapter are explained according to the circuit diagram in Figure 3.

1.Input section
The input section consists of noise filter and condenser input rectifying smoothing circuit. The noise filter, which consists of L1, C1, C26, C38, C34 and C35, reduces common mode noise.
R50 is a discharging resistor which is intended to eliminate voltage from the input plug when the power is turned off.
The rush current which is caused when the power is turned on is greatly limited by R2, DCR of L1 and the operating resistor of D1.

2.Switching section
The switching circuit drives the transistor Q1 to act as a switch by using the DC voltage rectified through C2 corresponding to the signals sent from the primary side control section. It and the transformer T1 comprise a high-frequency inverter.
C33 is a capacitor which absorbs the surge voltage generated by switching.

3.Primary side control section
This section drives the switching section by converting the pulse width of the signal sent from the secondary side control circuit through the photocoupler.
The control IC (IC4) is used to drive Q1 (Mos FET).
This IC, as an overvoltage protector, contains a function which stops oscillation when it detects the overvoltage at D8.

4.Output circuit section
For the secondary side output, a popular on-off system is applied. Ripples and common mode noise are reduced through the chokes of L2 and L4.
Q2 is a transistor for the charging switch. It is turned on through Q3 by the output of pin 6 of IC3 during quick charging and pre-/sub-charging.
D11 is used to prevent discharge troubles of the control circuit section when the input is turned off with the battery attached.

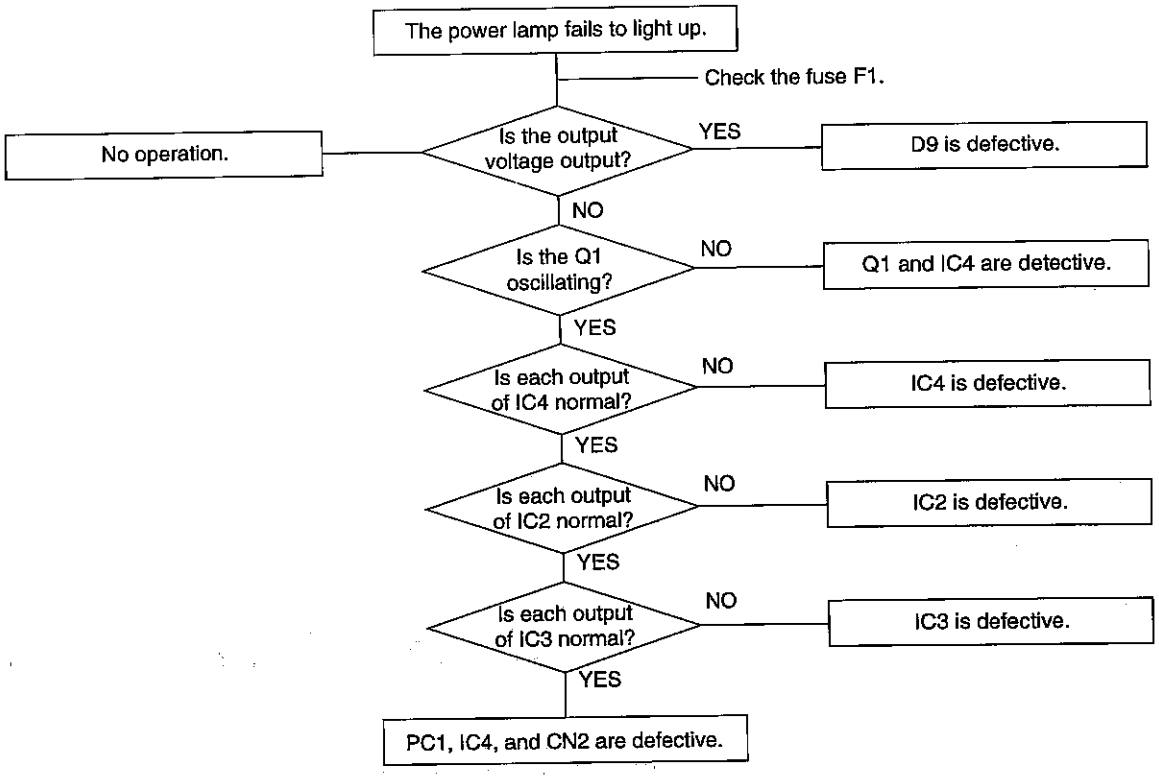
5.Battery detection circuit
When the battery is installed, SW2 is turned on by the switch knob.
If the DC plug is not attached to CN2 at this time, the GND level will be input to the pin 10 of IC3 by the transistor Q7 in order to detect the installation of the battery.

6.Secondary side control circuit
The function of the secondary side control section is to control the switching section by error-amplifying the detected output voltage and current and transmitting the signals to the primary side control circuit through the photocoupler.
The constant voltage is set and detected in IC2-II, whereas the adapter mode (4.5V)/charge mode (6.5V) selection is made by changing the reference voltage through the voltage switching operation of pin 5 of IC3.
The constant current and overcurrent protections are set and detected in IC2-I, while 1.5A/0.5A constant current selection is made through the output of pin 7 of IC3.
The overcurrent protection in the adapter mode is performed by the primary side control section.
IC1 has the constant voltage power function to provide drive power for IC3 and the reference voltage for IC2, as well as the reset function to prevent IC3 errors.
The constant voltage output of IC1 is used as a reference voltage when error amplifying of output voltage/current.

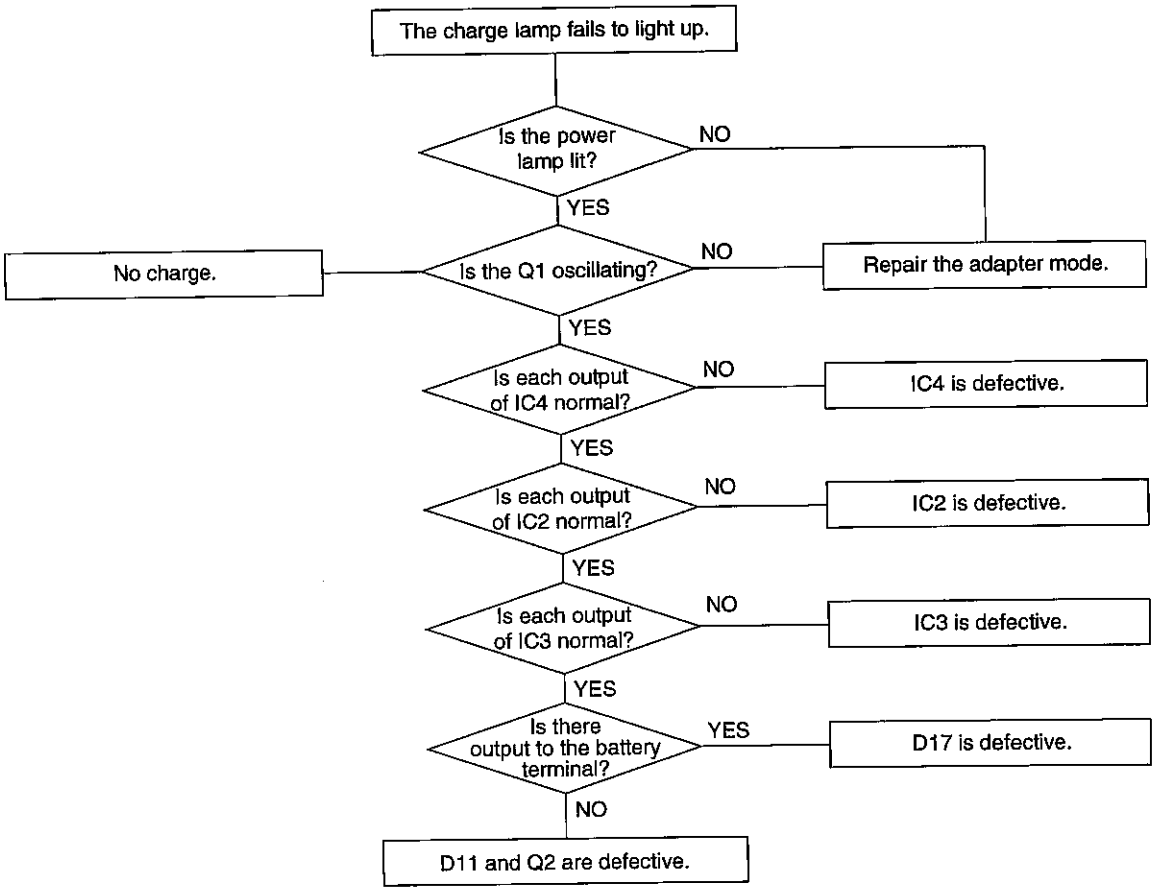
7.Display
Only the D16 (red LED) lights up in the adapter mode.
In the charge mode, D17 (orange LED) lights up together with D16 during quick charging. When quick charging is completed (in the trickle mode), only D17 goes out.
In the refresh mode, D16 lights, and D17 blinks. When the discharging is completed, the quick charging starts at once, and D17 begins to light stably.
D17 on-off is controlled through the pin 4 of IC3.

8.Discharge circuit
The discharging function in the refresh mode is enabled by the discharging resistors R44, R46 and R47 and the discharge circuit switch Q4.
The discharge current value is determined by the battery voltage and the resistance of the discharging resistor. Here, the constant current control is not performed.
The discharge end voltage is judged at the pin 22 of IC3 by converting the voltage of the discharging battery with R38 and R41.

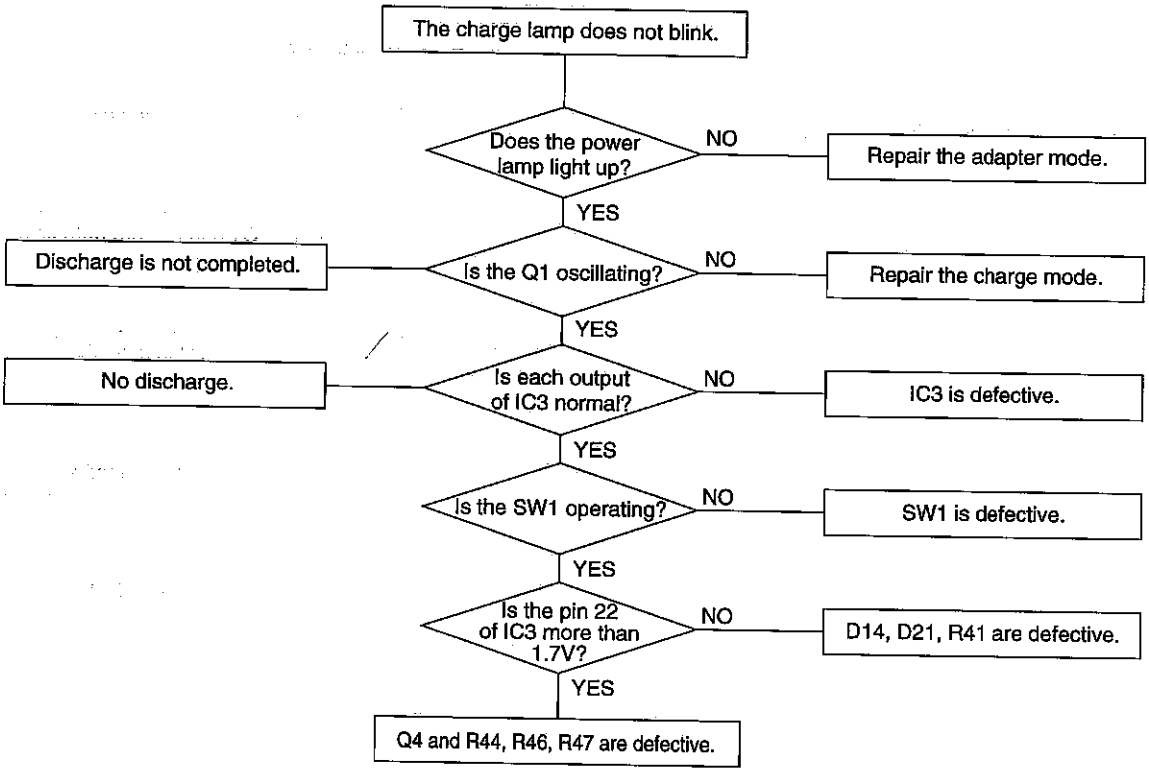
Adapter Mode



Charging Mode

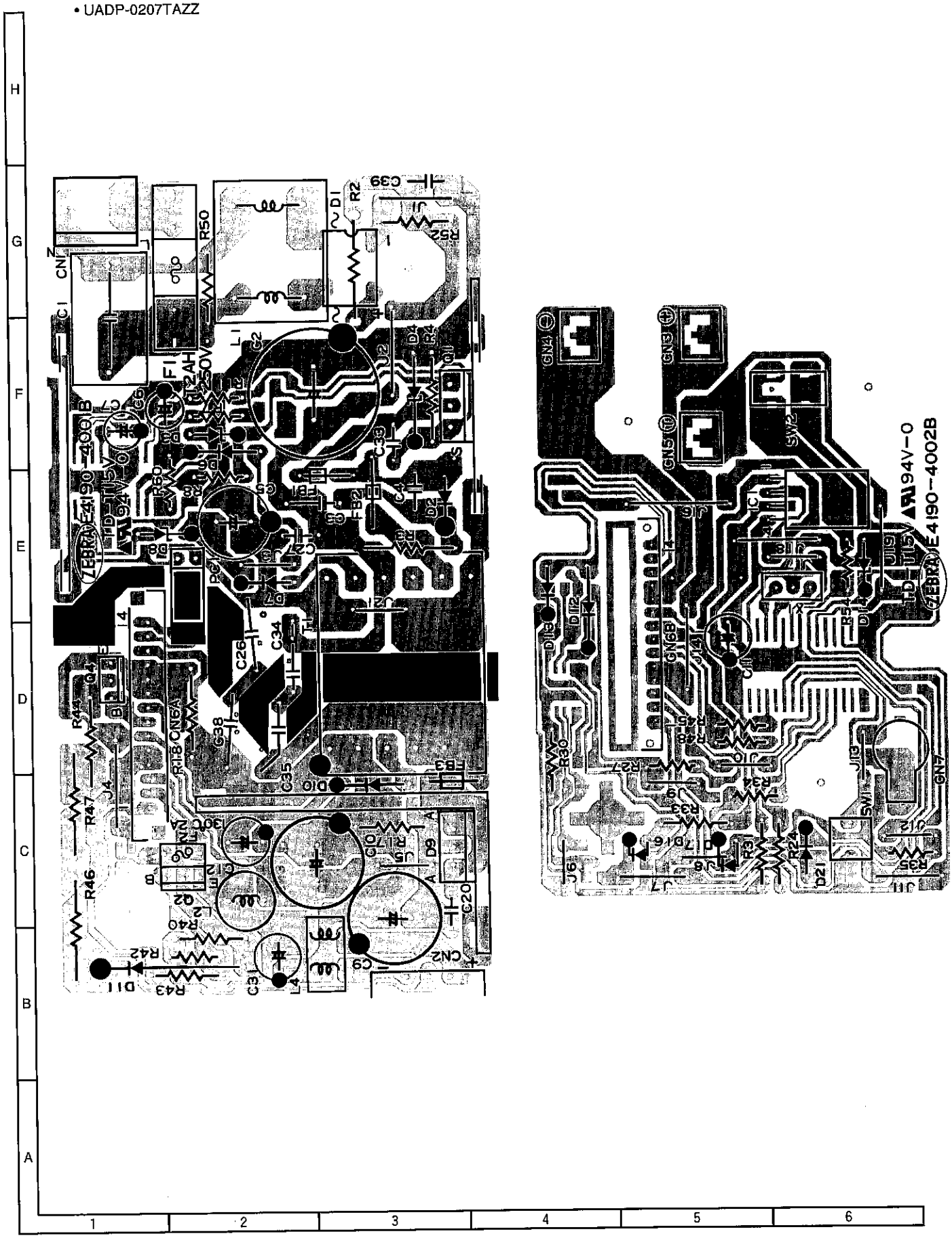


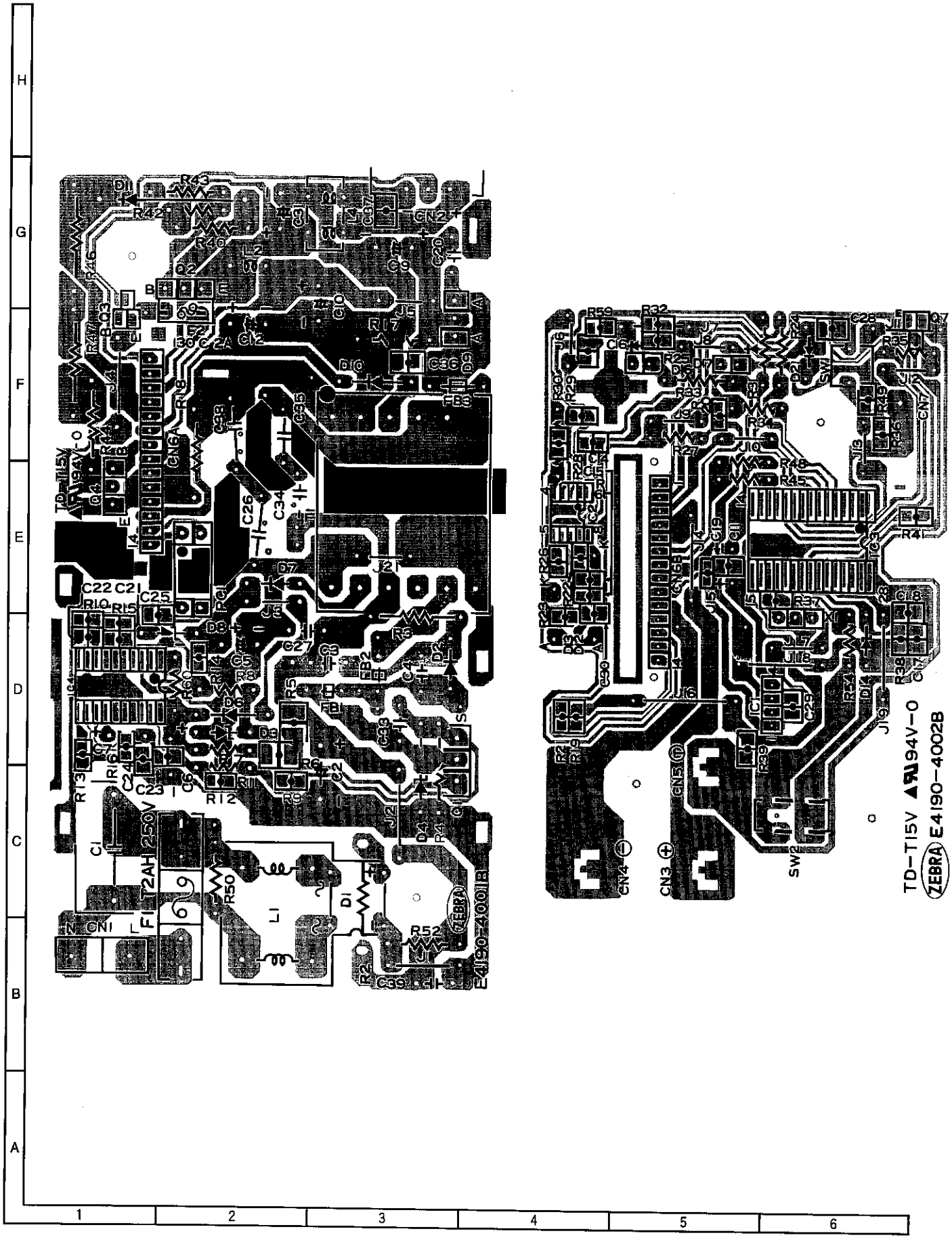
Refresh Mode



12-2. AC ADAPTER P.W.B. (VL-E66S/E66H)

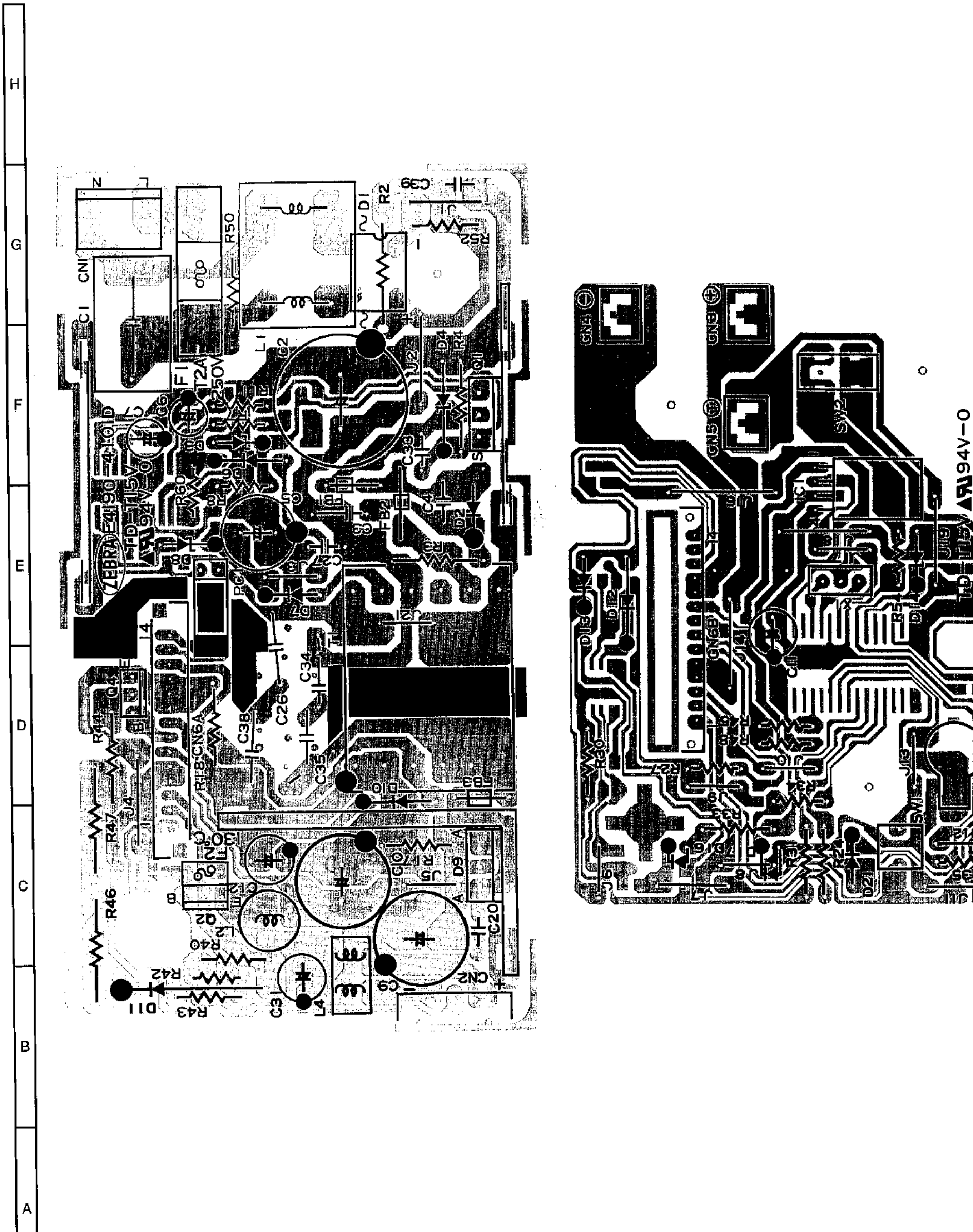
- UADP-0206TAZZ
- UADP-0207TAZZ

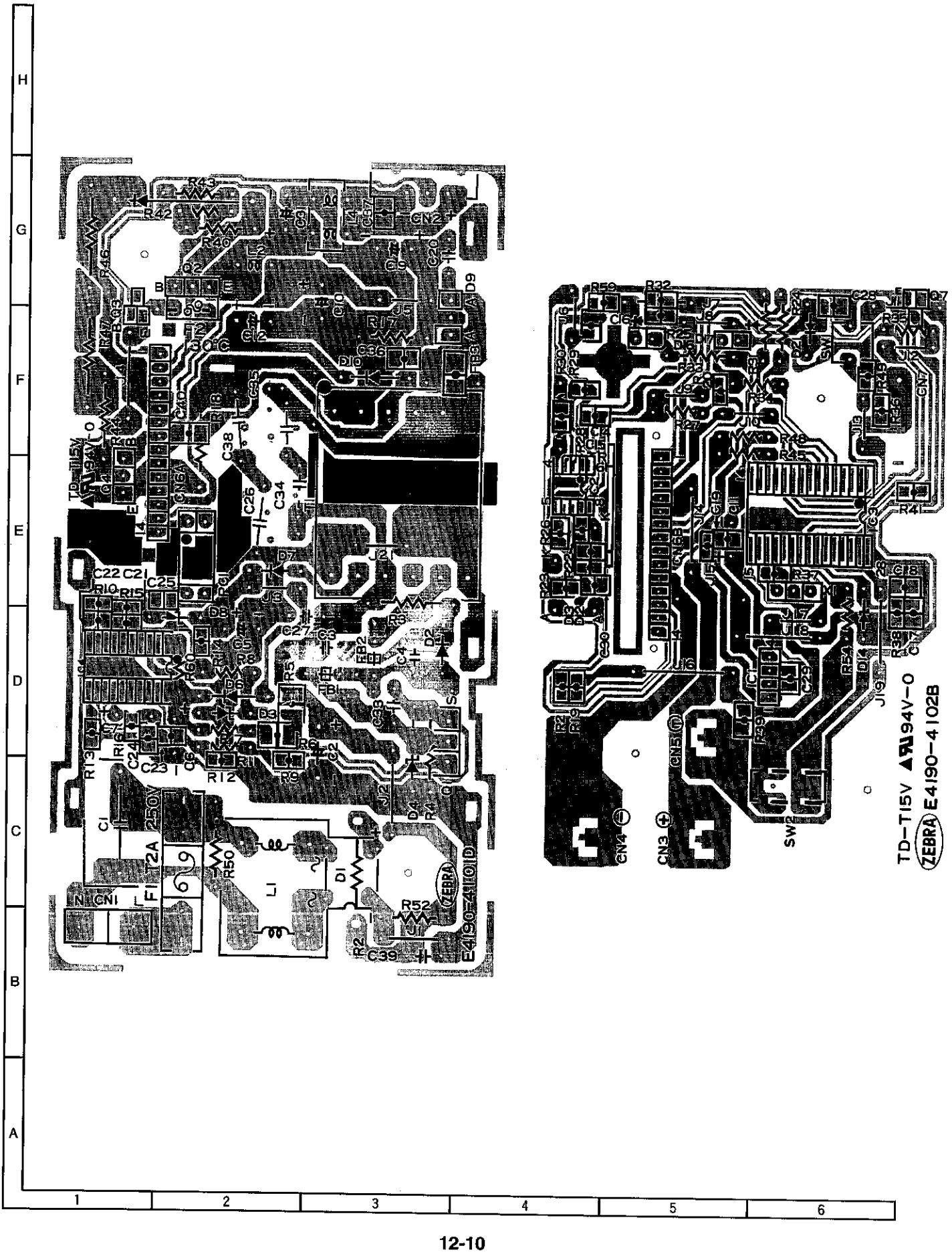



TD-T15V 94V-0
ZEBRA E4190-4002B
E4190-4001B
CN1
CN2
CN3
CN4
CN5
CN6
CN7
SW1
SW2
F1
T2AH 250V
L1
L2

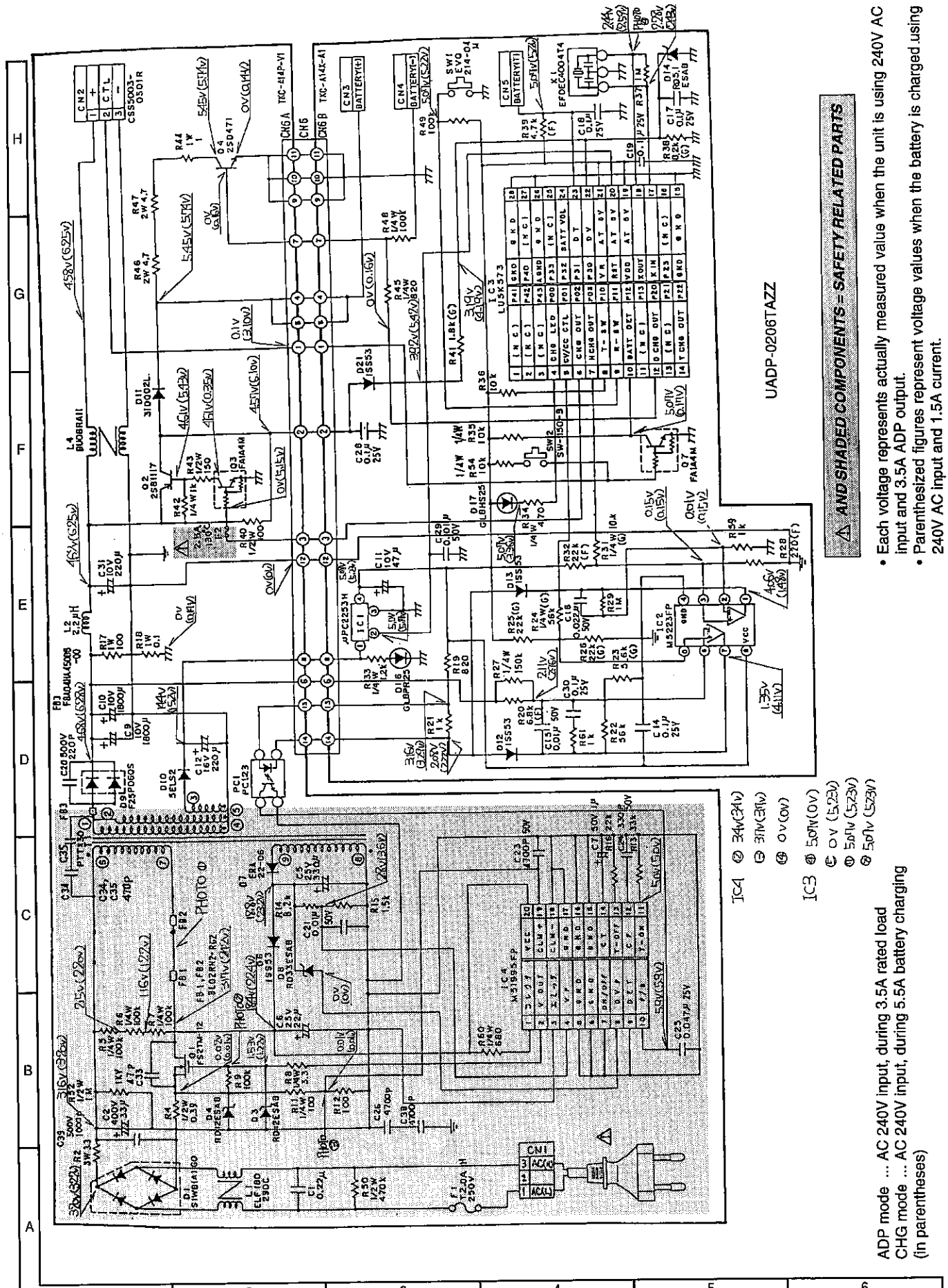
AC ADAPTER P.W.B. (VL-E78E)

• UADP-0232TAZZ

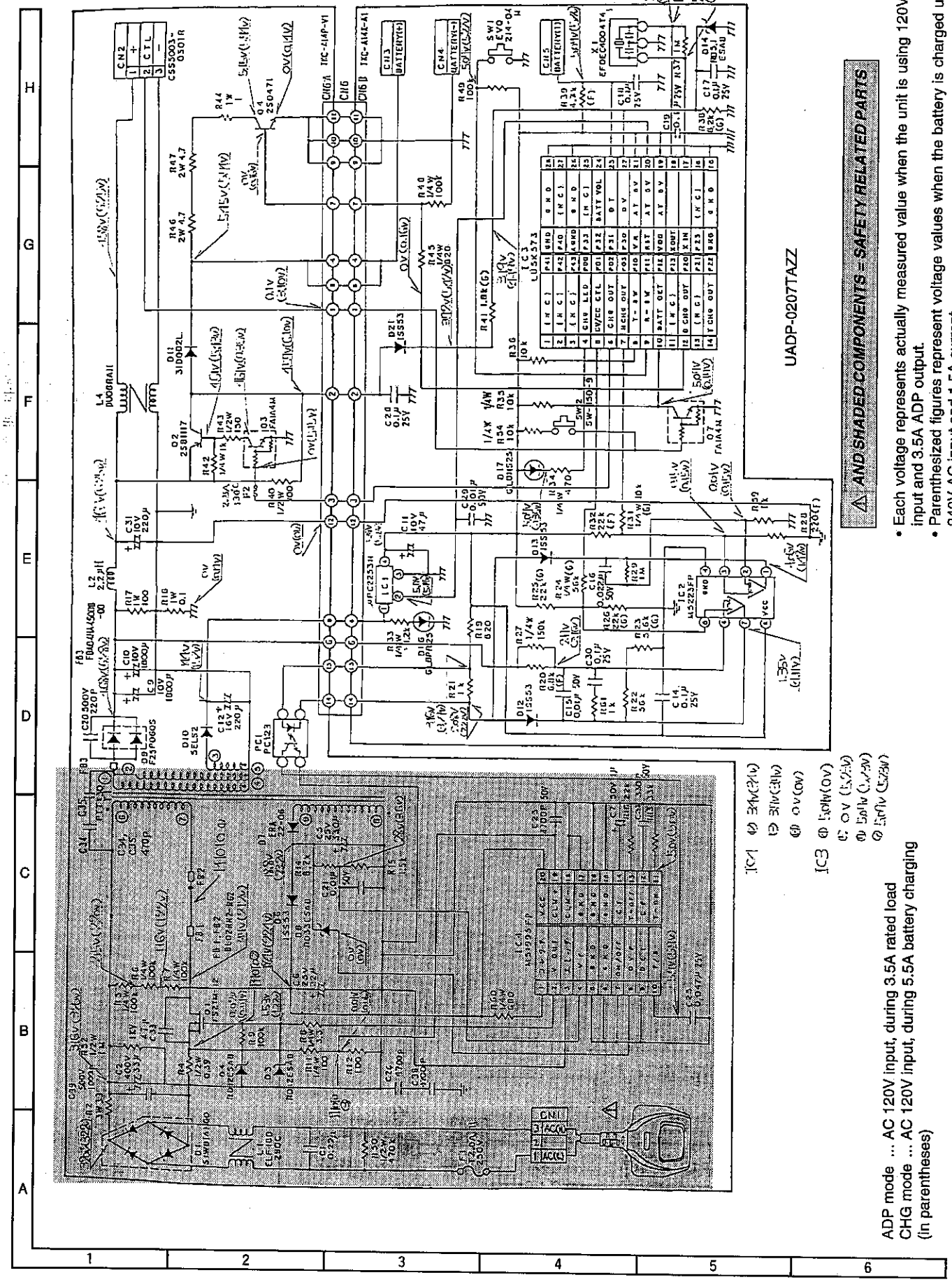



H
G
F
E
D
C
B
A
1
2
3
4
5
6
TD-T15V 94V-0
ZEBRA E4190-4102B
CN1
CN2
CN3
CN4
CN5
CN6A
CN6B
CN7
SW1
SW2
T2A 250V
E4190-4102B

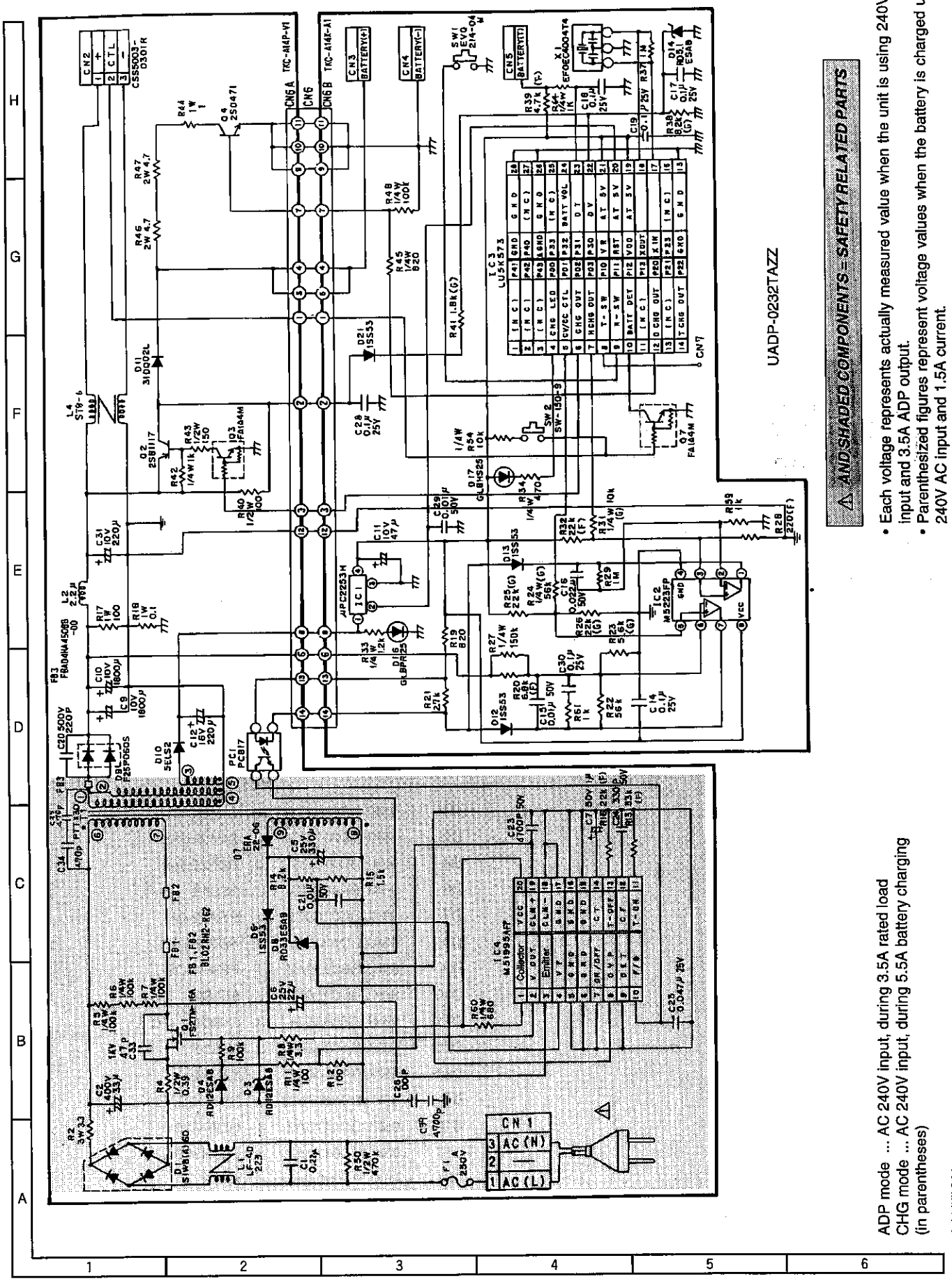
12-3. AC ADAPTER CIRCUIT SCHEMATIC DIAGRAM (VL-E66S)


UADP-0206TAZZ
⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS
• Each voltage represents actually measured value when the unit is using 240V AC input and 3.5A ADP output.
• Parenthesized figures represent voltage values when the battery is charged using 240V AC input and 1.5A current.
Unit for resistor shall be Ω.
Resistor not specified shall be 1/10W.
Unit for capacitor shall be F.
ADP mode ... AC 240V input, during 3.5A rated load
CHG mode ... AC 240V input, during 5.5A battery charging
(in parentheses)
CAUTION
*The AC plug configration varies depending on destinations.

AC ADAPTER CIRCUIT SCHEMATIC DIAGRAM (VL-E66H)


UADP-0207TAZZ
⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS
• Each voltage represents actually measured value when the unit is using 120V AC input and 3.5A ADP output.
• Parenthesized figures represent voltage values when the battery is charged using 240V AC input and 1.5A current.
Unit for resistor shall be Ω.
Resistor not specified shall be 1/10W.
Unit for capacitor shall be F.
ADP mode ... AC 120V input, during 3.5A rated load
CHG mode ... AC 120V input, during 5.5A battery charging
(in parentheses)
CAUTION
*The AC plug configration varies depending on destinations.

AC ADAPTER CIRCUIT SCHEMATIC DIAGRAM (VL-E78E)



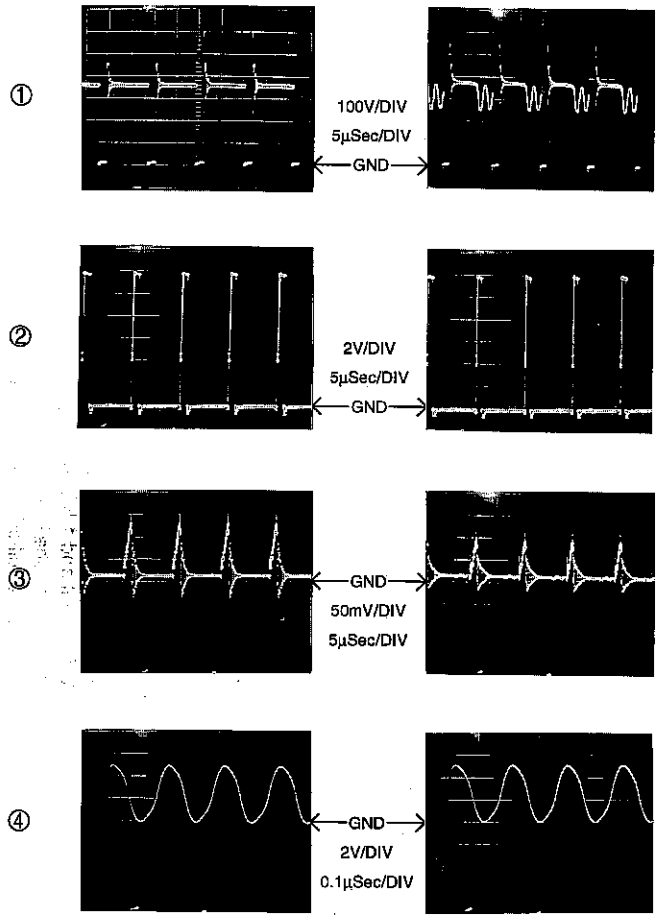
⚠ AND SHADED COMPONENTS = SAFETY RELATED PARTS

- Each voltage represents actually measured value when the unit is using 240V AC input and 3.5A ADP output.
- Parenthesized figures represent voltage values when the battery is charged using 240V AC input and 1.5A current.

Unit for resistor shall be Ω.
Resistor not specified shall be 1/10W.
Unit for capacitor shall be F.

CAUTION
*The AC plug configration varies depending on destinations.

• ADP mode • CHG mode



REPLACEMENT PARTS LIST/ EXPLODED VIEWS

ELECTRICAL PARTS LIST

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

" HOW TO ORDER REPLACEMENT PARTS "

★MARK : SPARE PARTS-DELIVERY SECTION

To have your order filled promptly and correctly, please furnish the following informations.

1. MODEL NUMBER
2. REF. NO.
3. PART NO.
4. DESCRIPTION
5. PRICE CODE

⚠ MARK: SAFETY RELATED PARTS

PWB ASSEMBLY IS NOT REPLACEMENT ITEM

Ref. No.	Part No.	★	Description	Code
INTEGRATED CIRCUITS				
IC1	95KUCB0118AZ	J	UPC2253H	AH
IC2	95KUCY0011AK	J	M5223FP	AE
IC3	95KUCY0030AK	J	LU5K573	AP
IC4	95KUCY0010AK	J	M51995FP	AP
TRANSISTORS				
⚠ Q1	95KUAG0104AZ	J	FS2TM-12	AL
Q2	95KUAB0055AK	J	2SB1117	AF
Q3	95KUAY0002AK	J	FA1A4M	AC
Q4	95KUAD0038KZ	J	2SD471	AD
Q7	95KUAY0002AK	J	FA1A4M	AC
DIODES				
D1	95KUBB0148DZ	J	S1WB(A)60	AF
D3	95KUBDAK120C	J	RD12ESAB	AB
D4	95KUBDAK120C	J	RD12ESAB	AB
D6	95KUBA0004KZ	J	1SS53	AB
D7	95KUBC0169CK	J	ERA22-06	AC
D8	95KUBDAK330C	J	RD33ESAB	AC
D9	95KUBB0230AZ	J	F25P06QS	AM
D10	95KUBC0250AK	J	5ELS2	AC
D11	95KUBC0095GC	J	31DQ02L-FC	AF
D12	95KUBA0004KZ	J	1SS53	AB
D13	95KUBA0004KZ	J	1SS53	AB
D14	95KUBDAK5R1B	J	RD5.1ESAB	AB
D16	95KUDC0173AZ	J	GL8PR25	AD
D17	95KUDC0174AZ	J	GL8HS25	AD
D21	95KUBA0004KZ	J	1SS53	AB
COILS AND TRANSFORMER				
⚠ T1	95K129065002	J	Transformer	BB

Ref. No.	Part No.	★	Description	Code
L1	95KUKZ0306ZZ	J	Chock coil	AK
L2	95KUKZ0505ZK	J	Coil	AF
L4	95KUKZ0707ZZ	J	Chock coil	AH
X1	95KUZZ0133ZZ	J	Crystal	AE
	CAPACITORS			
C1	95KUGFM224HG	J	0.22µF	AH
C2	95KUGZ0952ZZ	J	33µF, 400V	AK
C5	95KUGAD331RV	J	330µF, 25V	AE
	or			
C5	95KUGAD331HN	J	330µF, 25V	AE
C6	95KUGAD220RV	J	22µF, 25V	AC
	or			
C6	95KUGAD220HN	J	22µF, 25V	AD
C7	95KUGAF010RV	J	1µF, 50V	AC
	or			
C7	95KUGAF010HN	J	1µF, 50V	AB
C9	95KUGAB182NS	J	1800µF, 10V	AF
C10	95KUGAB182NS	J	1800µF, 10V	AF
C11	95KUGAB470KL	J	47µF, 10V	AE
	or			
C11	95KUGAB470KF	J	47µF, 10V	AD
C12	95KUGAC221RV	J	220µF, 15V	AD
	or			
C12	95KUGAC221HN	J	220µF, 15V	AC
C14	95KUGXAED104	J	0.1µF	AB
C15	95KUGXAEF103	J	0.01µF	AB
C16	95KUGXAEF223	J	0.022µF	AB
C17	95KUGXAED104	J	0.1µF	AB
C18	95KUGXAED104	J	0.1µF	AB
C19	95KUGXAED104	J	0.1µF	AB
C20	95KUGCS221AA	J	220pF, 500V	AB
C21	95KUGXAEF103	J	0.01µF	AB
C23	95KUGXAEF472	J	4700µF	AB
C24	95KUGXAEF331	J	330pF	AA
C25	95KUGXAED473	J	0.047µF	AB
C26	95KUGCQ472AB	J	4700pF	AD
C28	95KUGXAED104	J	0.1µF	AB
C29	95KUGXAEF103	J	0.01µF	AB
C30	95KUGXAED104	J	0.1µF	AB
C31	95KUGAB221RV	J	220µF, 10V	AB
	or			
C31	95KUGAB221HN	J	220µF, 10V	AC
C33	95KUGZ0779ZZ	J	47p	AC
	or			
C33	95KUGCU470BG	J	47p	AB
C34	95KUGCZ471BV	J	470pF	AD
C35	95KUGCZ471BV	J	470pF	AD
C38	95KUGCQ472AB	J	4700pF	AD
C39	95KUGCS102AA	J	1000pF, 500V	AB
C40	95KUGXFFJ102	J	1000pF, 100V(VL-E78E)	AC
	RESISTORS			
⚠ R2	95KUEFF3R3BM	J	3.3, 3W	AE
⚠ R4	95KUEFCR39AU	J	0.39	AC
R5	95KUEXDAK104	J	100k, 1/4W	AB
	or			
R5	95KUEXJAB104	J	100k, 1/4W	AB
R6	95KUEXDAK104	J	100k, 1/4W	AB
	or			
R6	95KUEXJAB104	J	100k, 1/4W	AB
R7	95KUEEB104BR	J	100k, 1/4W	AB
	or			
R7	95KUEEB104BE	J	100k, 1/4W	AA
R8	95KUEEB3R3BR	J	3.3, 1/4W	AB
	or			
R8	95KUEEB3R3BE	J	3.3, 1/4W	AB
R9	95KUEXCAS104	J	100k	AB
	or			
R9	95KUEXCAC104	J	100k	AA
	or			
R9	95KUEXCAA104	J	100k	AA
R11	95KUEEB101BR	J	100, 1/4W	AB
	or			
R11	95KUEEB101BE	J	100, 1/4W	AA
R12	95KUEXCAS101	J	100	AB
	or			
R12	95KUEXCAC101	J	100	AA
	or			
R12	95KUEXCAA101	J	100	AA
R13	95KUEXCAS333	J	33k(VL-E66S/H)	AB
	or			
R13	95KUEXCAC333	J	33k(VL-E66S/H)	AA
	or			
R13	95KUEXCAA333	J	33k(VL-E66S/H)	AA
R13	95KUEXCAU333	J	33k, ±1%(VL-E78E)	AC
R14	95KUEXCAS822	J	8.2k	AB
	or			
R14	95KUEXCAC822	J	8.2k	AA
	or			
R14	95KUEXCAA822	J	8.2k	AA
R15	95KUEXCAS152	J	1.5k	BB
	or			
R15	95KUEXCAC152	J	1.5k	AA
	or			
R15	95KUEXCAA152	J	1.5k	AA

Ref. No.	Part No.	★	Description	Code
R16	95KUEXCAS223	J	22k(VL-E66S/H)	AB
	or			
R16	95KUEXCAC223	J	22k(VL-E66S/H)	AA
	or			
R16	95KUEXCAA223	J	22k(VL-E66S/H)	AA
R16	95KUEXCAU223	J	22k, ±1%(VL-E78E)	AB
R17	95KUEFD101CF	J	100, 1/2W	AB
	or			
R17	95KUEFD101BH	J	100, 1/2W	AA
R18	95KUEFD0R1CE	J	0.1, 1W	AB
R19	95KUEXCAS821	J	820	AB
	or			
R19	95KUEXCAC821	J	820	AB
	or			
R19	95KUEXCAA821	J	820	AB
R20	95KUEXCAU682	J	6.8k	AB
	or			
R20	95KUEYAB6801	J	6.8k	AB
	or			
R20	95KUEYAA6801	J	6.8k	AB
R21	95KUEXCAS102	J	1k	AB
	or			
R21	95KUEXCAC102	J	1k	AA
	or			
R21	95KUEXCAA102	J	1k	AA
R22	95KUEXCAS563	J	56k	AB
	or			
R22	95KUEXCAC563	J	56k	AA
	or			
R22	95KUEXCAA563	J	56k	AA
R23	95KUEXCAT562	J	5.6k	AB
	or			
R23	95KUEYAC5601	J	5.6k(VL-E66S/H)	AB
R24	95KUES5602BR	J	56k, 1/4W	AB
	or			
R24	95KUES5602AE	J	56k, 1/4W	AB
R25	95KUEXCAT223	J	22k	AB
	or			
R25	95KUEYAC2202	J	22k	AB
	or			
R25	95KUEXCAE223	J	22k	AB
R26	95KUEXCAT223	J	22k	AB
	or			
R26	95KUEYAC2202	J	22k	AB
	or			
R26	95KUEXCAE223	J	22k	AB
R27	95KUEEB154BR	J	150k, 1/4W	AB
	or			

Ref. No.	Part No.	★	Description	Code
R27	95KUEEB154BE	J	150k, 1/4W	AA
R28	95KUEXCAU221	J	220	AB
	or			
R28	95KUEYAB2200	J	220	AB
	or			
R28	95KUEYAA2200	J	220	AB
R29	95KUEXCAS105	J	1M	AB
	or			
R29	95KUEXCAC105	J	1M	AA
	or			
R29	95KUEXCAA105	J	1M	AA
R31	95KUES1002BR	J	10k, 1/4W	AB
	or			
R31	95KUES1002AE	J	10k, 1/4W	AB
R32	95KUEXCAU223	J	22k	AB
	or			
R32	95KUEYAB2202	J	22k	AB
R33	95KUEEB122BR	J	1.2k, 1/4W	AB
	or			
R33	95KUEEB122BE	J	1.2k, 1/4W	AA
R34	95KUEEB471BR	J	470, 1/4W	AB
	or			
R34	95KUEEB471BE	J	470, 1/4W	AA
R35	95KUEEB103BR	J	10k, 1/4W	AB
	or			
R35	95KUEEB103BE	J	10k, 1/4W	AA
R36	95KUEXCAS103	J	10k	AB
	or			
R36	95KUEXCAC103	J	10k	AA
	or			
R36	95KUEXCAA103	J	10k	AA
R37	95KUEXCAS105	J	1M	AB
	or			
R37	95KUEXCAC105	J	1M	AA
	or			
R37	95KUEXCAA105	J	1M	AA
R38	95KUEXCAT822	J	8.2k	AB
	or			
R38	95KUEXCAE822	J	8.2k	AB
	or			
R38	95KUEYAC8201	J	8.2k	AB
R39	95KUEXCAU472	J	4.7k	AB
	or			
R39	95KUEYAB4701	J	4.7k	AB
	or			
R39	95KUEYAA4701	J	4.7k	AB
R40	95KUEEC101BK	J	100, 1/2W	AB
	or			

Ref. No.	Part No.	★	Description	Code
R40	95KUEEC101BE	J	100, 1/2W	AA
R41	95KUEXCAT182	J	1.8k	AB
	or			
R41	95KUEYAC1801	J	1.8k	AB
	or			
R41	95KUEXCAE182	J	1.8k	AB
R42	95KUEEB102BR	J	1k, 1/4W	AB
	or			
R42	95KUEEB102BE	J	1k, 1/4W	AA
R43	95KUEEC151BK	J	150, 1/2W	AB
	or			
R43	95KUEEC151BE	J	150, 1/2W	AB
⚠ R44	95KUEFD1R0CE	J	1, 1W	AC
	or			
R44	95KUEFD1R0BF	J	1, 1W	AC
R45	95KUEEB821BR	J	820, 1/4W	AB
	or			
R45	95KUEEB821BE	J	820, 1/4W	AA
⚠ R46	95KUEFE4R7CW	J	4.7, 2W	AC
	or			
R46	95KUEFE4R7AV	J	4.7, 2W	AD
⚠ R47	95KUEFE4R7CW	J	4.7, 2W	AC
	or			
R47	95KUEFE4R7AV	J	4.7, 2W	AD
R48	95KUEEB104BR	J	100k, 1/4W	AB
	or			
R48	95KUEEB104BE	J	100k, 1/4W	AA
R49	95KUEXCAS104	J	100K	AB
	or			
R49	95KUEXCAC104	J	100K	AA
	or			
R49	95KUEXCAA104	J	100K	AA
R50	95KUECC474AB	J	470k, 1/2W	AB
R52	95KUEEC105BK	J	1M, 1/2W	AB
	or			
R52	95KUEEC105BE	J	1M, 1/2W	AA
R54	95KUEEB103BR	J	10k, 1/4W	AB
	or			
R54	95KUEEB103BE	J	10k, 1/4W	AA
R59	95KUEXCAS102	J	1k	AB
	or			
R59	95KUEXCAC102	J	1k	AA
	or			
R59	95KUEXCAA102	J	1k	AA
R60	95KUEEB681BR	J	680, 1/4W	AB
	or			
R60	95KUEEB681BE	J	680, 1/4W	AA
R61	95KUEXCAS102	J	1k	AB
	or			
R61	95KUEXCAC102	J	1k	AA
	or			
R61	95KUEXCAA102	J	1k	AA
R64	95KUEEB102BR	J	1k(VL-E78E)	AB

MISCELLANEOUS

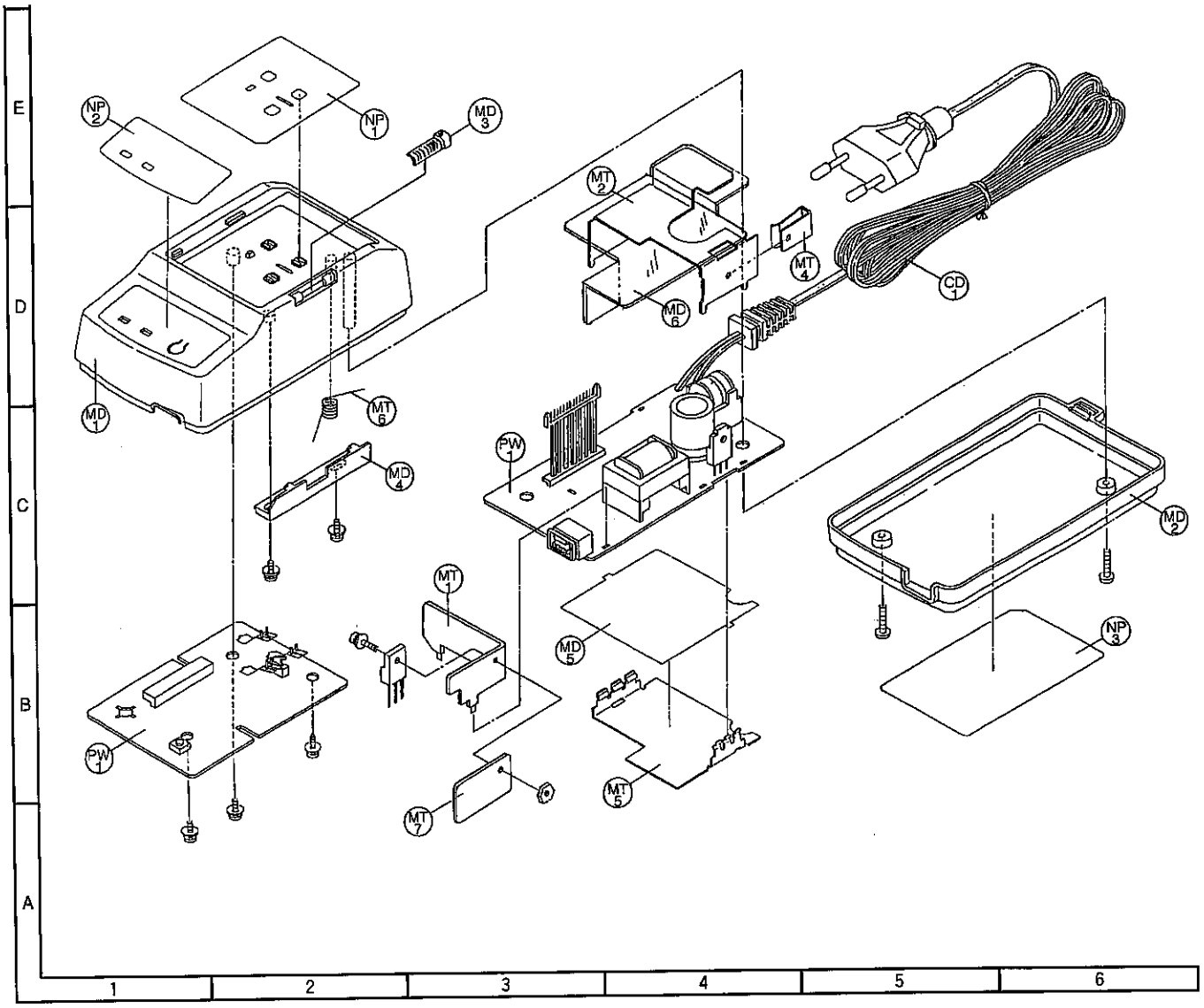
FB1	95KBFZ89322Z	J	Balun	AD
FB2	95KBFZ89322Z	J	Balun	AD
FB3	95KUKZ0334ZZ	J	Balun Inductor	AB
⚠ PC1	95KUDC0163BB	J	Photo Coupler	AH
CN6A	95KPCZ0196ZZ	J	Connector	AG
CN6B	95KPCZ0195ZZ	J	Connector	AG
CN1	95KPKZ0194ZZ	J	Socket	AC
CN2	95KPEZ0088ZZ	J	Socket	AH
CN3	95KFBZ0140ZZ	J	Terminal	AD
CN4	95KFBZ0140ZZ	J	Terminal	AD
CN5	95KFBZ0140ZZ	J	Terminal	AD
CN6	95KLRZ6058ZM	J	Terminal	AC
SW1	95KPFZ0267ZZ	J	Switch	AD
SW2	95KPFZ0271ZZ	J	Switch	AG
⚠ F1	95KPJCZZ0043	J	Fuse T2.0AH, 250V (VL-E66S/H)	AH
⚠ F1	95KPJCAY2001	J	Fuse T2.0A, 250V (VL-E78E)	AD
⚠ F1	95KPJCTB2001	J	Fuse T2.0A, 250V (VL-E78E)	AD
⚠ F2	95KPJT0083ZZ	J	Fuse 2.5A, 130°C (VL-E78E)	AE
⚠ CD1	95KEHS0528ZZ	J	AC Cord(VL-E66S/E78E)	AN
⚠ CD1	95KEHS0631ZZ	J	AC Cord(VL-E66H)	BD

CABINET PARTS

MT1	95KLRZ6091ZR	J	Sink, Heat	AH
MT2	95KLRZ6092ZP	J	Sink, Heat	AG
MT4	95KLRS5015ZZ	J	Supporter	AC
MT5	95KLRZ6114ZZ	J	Shild Cover	AD
MT6	95KLRZ6095ZZ	J	Spring	AC
MT7	95KLRZ6109ZR	J	Sink, Heat	AF
MD1	95KMRZ5412ZZ	J	Cabinet, Upper(VL-E66S/H)	AM
MD1	95KMRZ5465ZZ	J	Cabinet, Upper(VL-E78E)	AM
MD2	95KMRZ5413ZZ	J	Cabinet, Lower(VL-E66S/H)	AL
MD2	95KMRZ5466ZZ	J	Cabinet, Lower(VL-E78E)	AK
MD3	95KMRZ5414ZZ	J	Eject knob	AF
MD4	95KMRZ5415ZZ	J	Lock Lever	AH
MD5	95KGZZ5200ZZ	J	Sheet, Insulator	AF
MD6	95KGZZ5199ZZ	J	Cover, Insulator(VL-E78E)	AH

Ref. No.	Part No.	★	Description	Code
MD7	95KPZZ0620ZZ	J	Cover, (C26,C38) (VL-E78E)	AC
NP1	95KSBB1772ZZ	J	Label	AH
NP2	95KSAB1067ZZ	J	Name Plate	AF
NP3	95KSAB1083ZZ	J	Label(VL-E66S)	AH
NP3	95KSAB1084ZZ	J	Label(VL-E66H)	AH
NP3	95KSBB1872ZZ	J	Label(VL-E78E)	AR
FH1	95KPZZ0625ZZ	J	Fuse Holder	AB
SC1	95KRAZF034ZB	J	Screw 2.6 x 6	AB
SC2	95KRAZF033ZE	J	Screw 2.6 x 14	AB
SC3	95KRAZF035ZB	J	Screw 2.6 x 4.5	AB
SC4	95KRAZ3049ZB	J	Screw 3 x 12	AB
SC5	95KRBA3024ZB	J	Screw M3 Nut	AA

UADP-0206TAZZ(VL-E66S)
UADP-0207TAZZ(VL-E66H)



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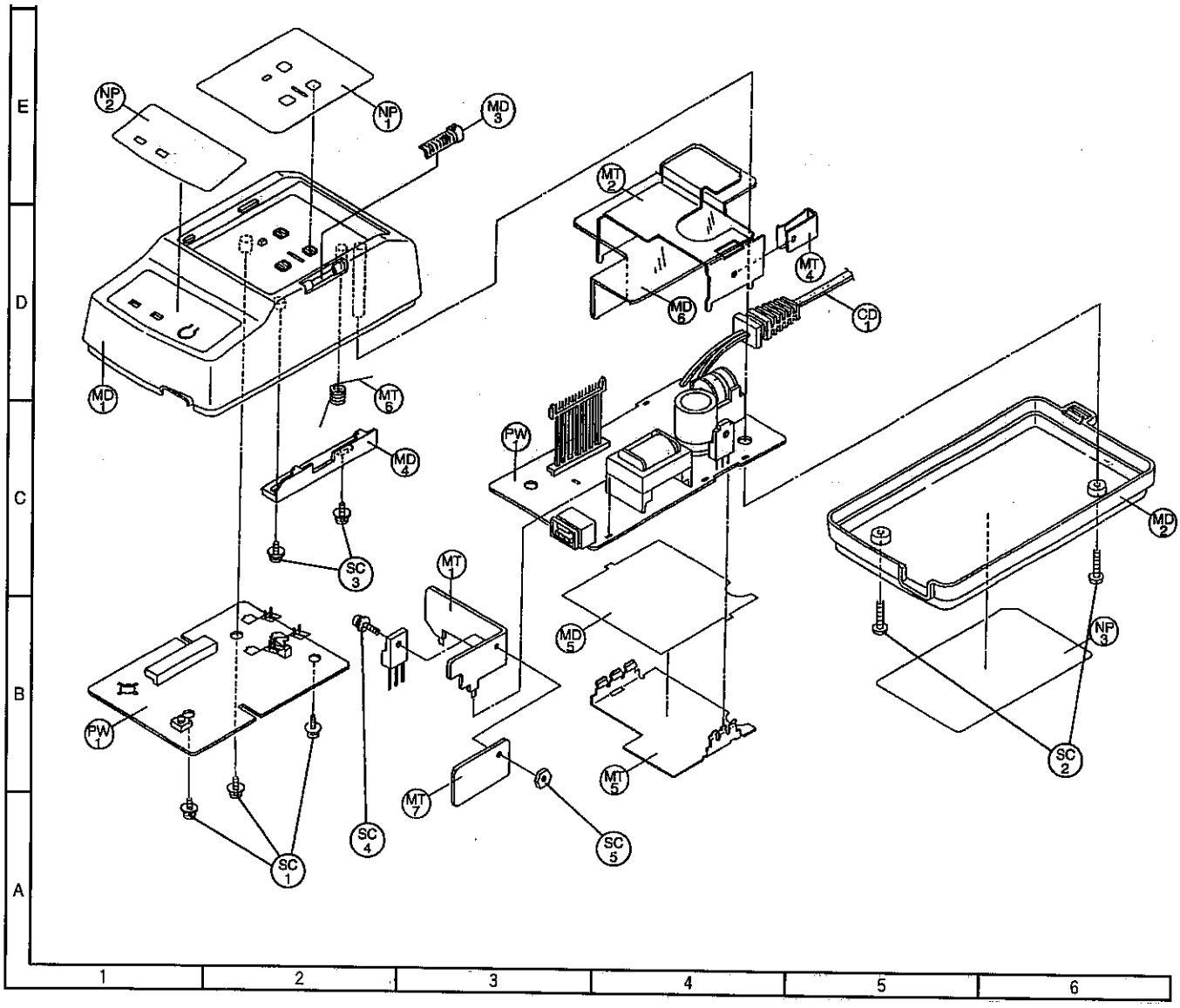

VL-E66S/H
VL-E78E

SHARP

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